25 no. 12

PEST CONTROL

DECEMBER 1957

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Public agency researchers, such as two shown at right testing pesticide effect on laboratory rodents, develop comprehensive research data which help answer many PCO questions on new chemicals and control techniques. For a description of work performed by leading tax-supported agencies, and their addresses, turn to pg. 9.

Monthly Magazine of Methods, Chemicals, and Equipment for Urban and Industrial Pest Control and Sanitation Since 1933

Did you see Charlie?

Chlordane report on the National Pest Control Association Convention, Louisville, Kentucky

IT WAS A PLEASURE

to renew acquaintances with "Charlie" Reeves, Public Health Equipment & Supply Co., San Antonio, and all of our other friends, at the recent national convention. We would like to extend our special thanks to the "Ladybugs" who visited our hospitality suite. Their Lazy Susans are all on the way. In case you missed the show, we've mailed you a souvenir post card of Miss Chlordane. If you haven't received your copy, write to us at once.

WINNERS OF MATCHING BUTTON PROMOTION

National Pest Control Association Convention—1957

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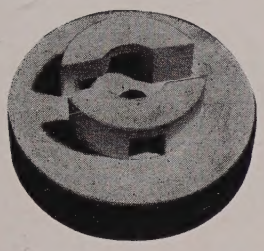

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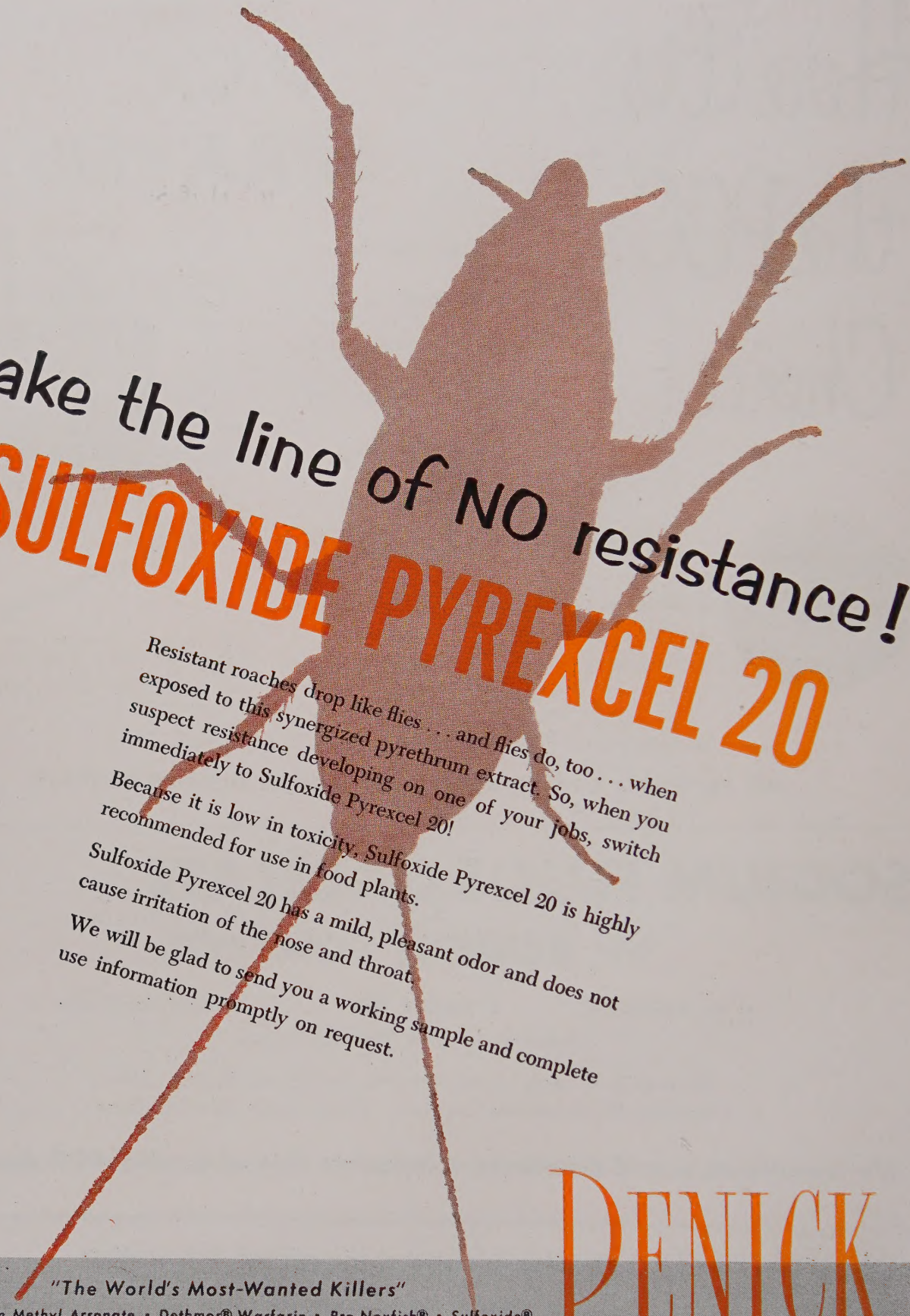

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Bright Star

Certification of PCOs looms this year as potentially the industry's brightest star. It holds promise of advancement never before equalled.

Now only a star in the sky, the road to its ultimate realization is a long one. In its fulfillment, certification will touch every member and every segment of the structural pest control industry. The way can be hazardous, and is one that must be traveled with care and wisdom.

Certification shines on *every* PCO. The leaders who will be responsible for its administration must be learned men devoted to the ideal that all have an equal opportunity. It'll take years before interpretations of newly established rules are understood by everyone. There'll be roadblocks and mistakes and misunderstandings. There always are when a new idea is growing. But enlightened, selfless men will find the right answers with the help of those who must follow, those whose outlooks may be different, yet worthy of consideration. Laws are the result of experience and trial and error. They can be changed, and must be, when unanticipated injustices result from misinterpretations of original intent.

Current plans for certification of soil treating termite operations are "a stop along the way." They are much different than the kind of certification proposed by a committee of the NPCA earlier this year, and sponsored by Dr. Bailey B. Pepper, eminent chairman of the entomology department at Rutgers. This first step requires minimum standards rather than the high standards envisioned by Dr. Pepper and other members of this committee that H. K. Steckel chaired. The word "certification" means many things to many people, but what is being realized now is only a move toward the ultimate goal. Our vigilance must guide what is done in the termite phase of this industry's work to see that the actions taken will set the kind of precedent that will be worthy of following when certification, in its fullest sense, covers the entire field of pest control.

The star never dims. It only looks less bright if we shield our eyes or turn our heads from the direction in which it is shining.

This is an ideal season in which to be talking about stars. We hope there'll be a big one atop your Christmas tree. All of us here on the staff of *Pest Control* wish you and your families a very happy holiday season and look forward with you to a prosperous 1958.

PEST CONTROL
EVERY MONTH SINCE 1933

JAMES A. NELSON, Editor
PHIL OSBORNE, Editorial Assistant
R. J. HOFFER, Circulation Manager

Representatives
THEODORE RIEDEBURG, East Coast
JAMES E. MUNFORD CO., West Coast

Volume 25 December 1957 No. 12

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Published Monthly by
TRADE MAGAZINES, INC.
Publication Office: 324 N. State Street, Painesville, Ohio

Please send all correspondence to
Editorial and Advertising Offices: 1900 Euclid Avenue, Cleveland 15, Ohio

Cooperating with
NATIONAL PEST CONTROL ASSOCIATION

New York City Advertising Office
Theodore Riedeburg & Associates
415 Lexington Ave., Phone: MUrray Hill 7-1488

West Coast Advertising Office
The James E. Munford Company
517 North Ave. 64, Los Angeles 42, Calif.,
Phone: CLinton 5-1547

Single Copy Price: 75 cents; Foreign: $1.00. **Subscription Rates:** U. S. and possessions, Canada and members of the Pan American Postal Union, 1 year, $5.00; 2 years, $8.00. All other foreign subscriptions, 1 year $6.00; 2 years, $10.00. **Change of Address:** Three weeks advance notice is necessary for change of address. Both old and new address must be given. Post Office will not forward copies. Entered as Second Class Matter at the Post Office at Painesville, Ohio, under the act of March 3, 1879.

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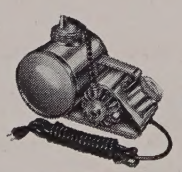
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Letters

Lauds MB for Khapra Beetles

Recently we had an assignment to fumigate an empty ship hold against infestation of khapra beetle. For ship fumigation, we normally prefer methyl bromide, but if insect species warrant, we resort to HCN also. In this case, however, the ship authorities were also convinced we should fumigate with methyl bromide. Based on the fumigation experiment at Imperial, California *(Pest Control*, April, 1955), we decided to increase the dosage in this case to 4 pounds per 1,000 cubic feet at the prevalent temperature unlike the normal dosage of two pounds per 1,000 cubic feet which we use for fumigating empty cargo spaces. The fumigation, however, was cancelled due to the alteration for the schedule of the ship, but our academic interest still continues.

Methyl bromide, we feel is the choicest of the fumigants, especially against khapra beetles. We would quote here from the National Pest Control Association technical release No. 3-55 of February 2, 1955, which says: "The khapra beetle is very difficult to control. The larvae at least are especially resistant to most residual insecticides, and are as resistant to HCN as the rice weevil."

However, M/s Pradhan, Govindan, New Delhi 1954 have tested the toxicity of HCN and methyl bromide against Trogoderma and their results revealed that methyl bromide is only 90% as toxic as HCN to Trogoderma and again M/s Lindgren, Vincent & Krohn of Berkeley, California 1955 maintain that HCN was the only fumigant of the ten tested to which all the immature stages of Trogoderma were most susceptible.

We shall be glad to have more information on this subject, especially from operators who have had a chance to fumigate ships, particularly against khapra beetle.

N. S. Rao

Pest Control (India) Private, Ltd.
36 Yusuf Bldg.
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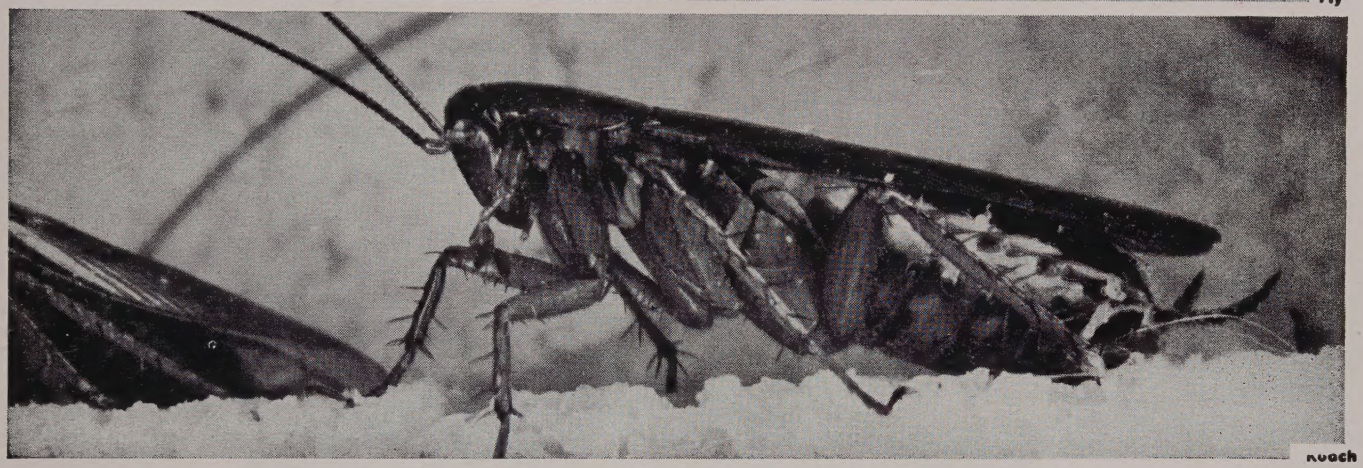
Bombay, India

Mosquito

Fly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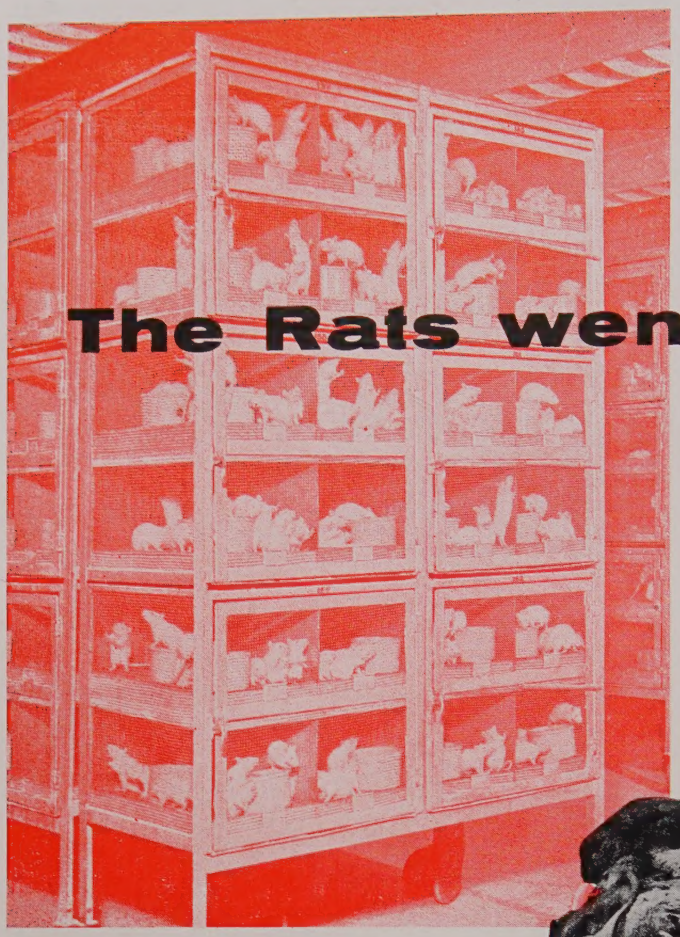

The Rats went to College...

and played an unwilling part in perfecting anticoagulants for use against human disease.

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Index to Your Cooperating PUBLIC AGENCIES

by R. J. KOWAL
Chief, Division of Forest Insect Research
Southeastern Forest Experiment Station
U. S. Forest Service
Asheville, North Carolina

FEW persons have a real appreciation or a concrete knowledge of the vast contribution public agencies make to the pest control profession. Many engaged in pest control, and some in public service exposed only to limited phases of this field, little realize many public agencies and thousands of public servants are helping the pest control industry, directly and indirectly, to attain the high standards of performance and technical proficiency for which it is rapidly becoming well-known.

Pest control operators are, or should be, acquainted with their state associations and the vigorous support and guidance given them by state colleges. State association meetings and Regional conferences represent an extremely important contribution to the pest control profession. However, they are largely the means through which the research, experience, and practical knowledge of people from many agencies are brought to the pest control profession.

It is impossible in this article to do much more than briefly refer to activities of various agencies as they relate to pest control. Undoubtedly important contributions of certain units and individuals may not be included, but a sincere attempt is made to cover activities of significance, particularly in the South and especially those which might be meaningful to PCOs.

FEDERAL AGENCIES

U. S. Department of the Interior

The **Fish and Wildlife Service** has made notable contributions in research on the identification, behavior, and control of rodents. Much information used by the pest control industry, relative to rat and mouse control by various techniques using 1080, warfarin, pivalyn, etc., has its origin in the Branch of Predator and Rodent Control of the Fish and Wildlife Service. Control measures for birds, and mammals such as bats, skunks, opposums, squirrels, weasels, etc., have been developed by this agency and made available to the pest control industry. The toxic effect of pest control chemicals on protected wildlife is studied by the agency and benefits PCOs. Many PCOs are familiar with writings and addresses by Walter Dykstra, Donald Spencer, and others of the U. S. Fish and Wildlife Service.

Headquarters of this agency is in the Department of Interior Building, Washington, D. C.

U. S. Department of Health, Education, and Welfare

Most of us are familiar with contributions made by the **Public Health Service** toward the control of communicable diseases such as malaria, typhus, dysentery, etc., in this country. However, few probably appreciate the vast research and educational activities conducted by this organization. Because the pest control profession is vital to the protection of man from communicable disease, contributions of this agency are particularly noteworthy.

Author Kowal has been with the U. S. Department of Agriculture since 1933, serving both the Bureau of Entomology and Plant Quarantine and the U. S. Forest Service.

Perhaps the best known activity of the Public Health Service in the South is the research conducted at the Communicable Disease Center in Savannah, Georgia. Here are studied the life history and behavior of mosquitoes, flies, fleas, roaches, bedbugs, and other insects and rodents in relation to transmission of diseases of man. Here, too, control of these pests is investigated, as is the effect of insecticides and rodenticides on man. With reference to the latter, the laboratory at Savannah recently conducted a series of tests in cooperation with the National Pest Control Association to determine the toxicity hazard of certain chemicals, used in termite control, to occupants of treated homes.

Of particular value to the pest control profession are the educational activities of the training section of the Public Health Service. This section prepares and disseminates to the public results of research and its application, in addition to reports on other activities of the agency. Publications, film strips, movies, and slides are available from this unit. There is seldom a meeting of PCOs—local, regional, or national—that does not have a representative of the Public Health Service present to contribute to its success.

U. S. Department of Agriculture

The Department of Agriculture is composed of a large number of units, most of which contribute, directly or indirectly, to benefit the pest control profession. Discussion will be limited to those with which the writer is somewhat familiar and activities of which have a direct effect on PCOs.

The **Agricultural Research Service** is composed of various sections engaged in entomological research, control, and regulatory activities. (These were once a function of the old, well-known

Bureau of Entomology and Plant Quarantine). Their contributions to the public and the pest control industry are almost innumerable, particularly with respect to basic and applied research on household insects and the techniques and insecticides used to control them. Perhaps the best known contributions, in the East at any rate, come from the Agricultural Research Center at Beltsville, Maryland, and in the South, from the Orlando Laboratory at Orlando, Florida, where many wartime developments in insecticide research became world famous. At the present time the **Pesticide Chemicals Research Section** at Beltsville covers many aspects of insecticide research, including study of synthetic organic insecticides, analytical investigations on insecticides, insect physiology and toxicology, and insecticidal plants and aerosols. Similar research on a smaller scale is being conducted at Tifton, Georgia, and Orlando, Florida. Also, at Orlando the **Insects Affecting Man and Animals Section** is conducting intensive studies on insects affecting man and the household.

The **Pesticides Regulation Section**, as its name indicates, is responsible for proper handling of pesticides in interstate commerce. Its activities are intended to benefit both producers and users of insecticides. The unit is involved in approval of labels and products and, in this connection, investigates toxicities of pesticides, hazards involved, formulations recommended, methods of application, and effectiveness of treatments. While the role of this unit cannot be discussed in detail, the benefits are obvious. The operator who uses pesticides is protected, as is he who uses, and packages and distributes them. It is intended too that regulatory activities of this agency prevent misuse of pesticides in any way, particularly by amateur "do-it-yourself" fans troubled by termites. A number of labels, involving unfounded claims, have been under critical review, at one time or another, and then were turned down. This Section's field offices in the Southeast are located in Washington, Baltimore and Beltsville, Maryland, and Atlanta, Georgia.

Within the **Agricultural Marketing Service**, the **Section of Stored Products Insects**, like the units mentioned above, was once part of the Bureau of Entomology and Plant Quarantine. Its contributions in the study of insects destructive to stored grain, tobacco, and fabrics are well known. Of particularly notable interest to PCOs is the research conducted at the Stored Products Insect Laboratory in Savannah, Georgia. Original and basic research for protection of fabrics from destructive insects and control of these insects with chlorinated hydrocarbons was carried on here. Other centers are at Richmond, Virginia, and Tifton, Georgia.

When one considers a very large part of the effort of the pest control industry is devoted to prevention and control of insects and decay affecting wood and cellulose products, the value of the **Forest Service** must be recognized as considerable.

The history of this agency's effort to protect wood from destruction by wood destroying organisms goes back a number years and must be credited to many individuals. However, it was in the late twenties that the Service's activities began to exert a strong influence on the pest control profession. It was then that Dr. T. E. Snyder, in cooperation with other specialists here and abroad, began doing biological work on termites. In the thirties, his interest broadened into the practical application of his knowledge, i.e., to prevent termite damage to buildings. It was during this period he and Bill Buettner, pioneer of the National Pest Control Association, laid the foundation for termite control as an integral part of pest control. Research programs were begun to develop termite control measures, proper application of known measures were publicized at meetings and in print, and unrelenting war was waged on so called "termite racketeers and grafters." That effort has persisted until this day to improve termite control methods and to attain a high standard of performance among PCOs. Research was conducted principally in the eastern United States and the Canal Zone, much of it in cooperation with the pest control industry. From 1937-1939 a large number of homes in Asheville, North Carolina, were treated for termites to test various chemicals and methods of application. This was done, "hand in hand" with direct cooperation from PCOs; and thus, it was that the writer obtained his introduction to termite control.

Our research has included other wood products insects such as powder-post beetles, particularly Lyctus, dry-wood termites, and various other wood boring species. It has included also study of resistance of natural woods, structural materials, fabrics and other cellulose products, communications materials, plastics, etc., to termite attack and penetration. This is presently conducted at Beltsville, Maryland, Gulport, Mississippi, and the Canal Zone.

Forest pathologists are credited with similarly significant accomplishments. They have determined the nature of decay organisms which attack wood in structures and have developed methods of preventing and controlling damage.

Finally, there are the numerous contributions, many of them intangible, of the **Forest Products Laboratory**, Madison, Wisconsin, foremost leader in the study of wood since 1910 and greatest installation of its kind in the world. Many of the accomplishments reported above are in some way related to wood studies conducted by the Laboratory. Data on strength of different wood species, nailing qualities, paintability, proper use in construction, etc., have come from this agency. In the field of wood

(Continued on page 36)

Coming Up

In Next Month's Silver Anniversary Issue

- **Pest Control's First 25 Years**
- **'58 Regional PCO Conference Programs**
- **Rats in Pittsburgh's "Lower Hill"**
- **Pesticide Use Precautions**
- **What FDA Inspectors Look For**
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by J. J. DAVIS

Professor Emeritus
Department of Entomology, Purdue University
Lafayette, Indiana

WHAT IS A BOOK? According to Franklin Spier, an American publisher, "A book is a book only when it is read; without a reader it is just so much paper, glue, and cloth."

Every pest control operator should have a library, however small. Although such a library should be available primarily for reference, the owner should study his books sufficiently to understand their contents and be able to use them intelligently when needed for identification, facts about the insects involved, and their prevention or control.

An office library should include publications which deal not only with household and structural pests, but should also include books on farm and garden insects, animal parasites, and stored grain pests, because a PCO should have a broad knowledge of entomology and be able to advise his patrons on all kinds of pests which may be brought to his attention. That's good public relations! Therefore, we are suggesting herewith a list of books which every PCO should consider when adding to his library.

Persons wishing references to special entomological topics should consult the entomologist of his state agricultural experiment station or state agricultural college. They will gladly help you.

It is suggested you write your state agricultural experiment station or consult with your county agricultural agent, for a list of available publications on insects and rodents, most of which can be obtained without charge. Similarly, write the Superintendent of Documents, Washington 25, D. C. for a list of insect publications issued by the Government.

Here is your two-foot bookcase of useful insect books:

Borror and DeLong. "An Introduction to the Study of Insects." Rinehart and Co., 232 Madison Ave., New York 16, N. Y. $10.00. 1954. The most up-to-date treatise on classification and identification of insects.

Chu. "How to Know the Immature Insects." Wm. C. Brown Co., 915 Main St., Dubuque, Iowa. $3.00. 1949. An illustrated key for identifying the common orders and families of immature forms of insects.

Cotton. "Pests of Stored Grain and Grain Products." Burgess Publishing Co., 426 S. Sixth St., Minneapolis 15, Minn. $4.00. Rev. 1956. An excellent reference on stored grain insects.

Craighead. "Insect Enemies of Eastern Forests." Misc. Pub. 657, U.S. Department of Agriculture, Superintendent of Documents, Washington 25, D.C., $2.75. 1950. A complete reference to the common forest insects, and includes many pests of structural timbers.

Folsom. "Entomology, with Reference to its Ecological Aspects." P. Blakiston's Sons and Co. (Now a part of McGraw-Hill, New York, N.Y.) Rev. 1934. The most complete treatise on the fundamentals of insect life. **(Out-of-print).**

Jacques. "How to Know the Insects." Wm. C. Brown Co., 915 Main St., Dubuque, Iowa. $3.00. 1947. An illustrated key to the more common families of insects.

Jacques. "How to Know the Beetles." Wm. C. Brown Co., 915 Main St. Dubuque, Iowa. $4.25. 1951. Illustrated key for identifying many of the beetles.

Lutz. "Field Book of Insects." G. P. Putnam's Sons, 210 Madison Ave., New York 16, N. Y. $4.50. 1935. A well-illustrated handbook of the more common North American insects, with pertinent notes on habits and life history.

Mallis. "Handbook of Pest Control." MacNair - Dorland Co., 254 West 31st St., New York 1, N. Y. $9.75. Rev. 1954. The most complete treatise available on structural pests.

Metcalf, Flint and Metcalf. "Destructive and Useful Insects." McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $12.50. Rev. 1951. A complete treatise on insects of economic importance, including the fundamentals of insect life and control.

Parker. "Food Plant Sanitation." McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $6.50. 1948. A useful book for those doing work in food processing plants.

Snyder. "Our Enemy the Termite." Comstock Publishing Co., 124 Roberts Place, Ithaca, N. Y. A complete, abbreviated, authentic, and popularly written book on one of our most destructive insects by one of the world authorities on the problem. Rev. 1948. **(Out of print).**

Steffernd. "Insects — The Yearbook of the U. S. Department of Agriculture." 1952. Superintendent of Documents, Washington 25, D. C. $2.50. Many short articles by entomology authorities on all phases of entomology. Includes 72 colored plates of the major insects, showing stages of their development and types of damage.

Weinman. "Entomology Section, Pest Control Technology." National Pest Control Association, 250 W. Jersey St., Elizabeth, N. J. Available to members of the NPCA only.

"Sanitation for the Food Preservation Industries." Prepared by the Association of Food Industry Sanitarians. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y. $6.00. 1952.

Most of the books listed can be obtained from book dealers at publisher's prices. Two dealers in entomology books are:

Baker & Taylor Co., N. Broad St., Hillside, N. J.

John D. Sherman, Jr., 132 Primrose Ave., Mount Vernon, N. Y.

Books indicated as "out-of-print" may be obtained from used book dealers. Sherman is the largest such dealer in the U.S.

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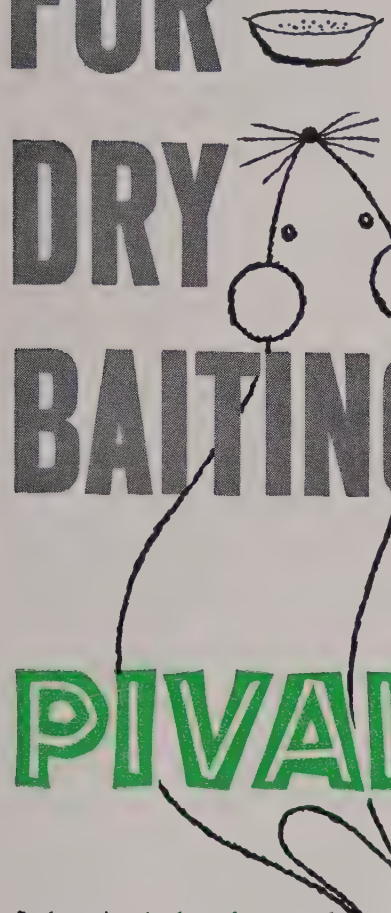

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European Tour Tied In with International PCO Meeting

Time is running out for industry members who want European travel tour reservations in conjunction with the International Congress of Pest Control Operators scheduled for Vienna, Austria May 14-18.

A project of Professor J. J. Davis of Purdue University, Walter O. Blank of Abalene Pest Control, New York, and Maurice Oser, Oser Exterminating, Denver, Colorado, the excursion will last 22 days, plus travel time over and back across the ocean.

Miss Lillian C. Harris, special representative of Lissone Lindeman USA, Inc., which is handling arrangements, said tour members can travel both ways by ship (seven days over and five back) or make one or both crossings by plane. But persons who plan to sail will have to contact Miss Harris by December 15 at the latest, she said. Otherwise, the deadline is January 15 for tour members flying both ways.

The ship, SS Cristoforo Colombo, will leave New York April 23 and arrive in Naples May 1. The return voyage on the Queen Elizabeth will be from Cherbourg just outside Paris May 22 and will get passengers back to New York May 27.

Sights will include, among other cities and attractions, Naples, Pompeii, Amalfi Drive, Sorrento, Capri, Rome, Florence, and Venice in Italy; Vaduz, capital of Lichtenstein, a small principality on the Swiss-Austrian border; the Bavarian Alps and Lake Constance in Switzerland; and Salsburg and Vienna in Austria. Following the Congress, tour members will travel to Paris for their departure home.

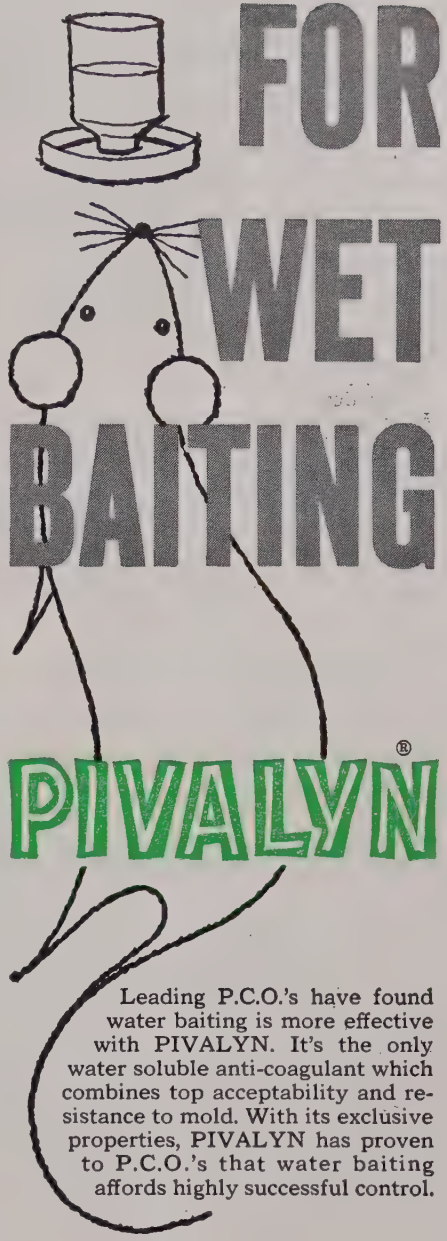
Miss Harris estimated cost per person for the tour will start at $945, depending upon travel accommodations. Contact her at 303 N. Harrison Street, Spencer, Indiana, for reservations.

CSMA Drafts Model Label Bill

A model bill has been prepared by the Chemical Specialties Manufacturers Association requiring proper labels on retail packages of chemicals that might prove harmful if used by inexperienced persons.

The bill is designed as a guide for state governments considering protective legislation.

FOR WET BAITING



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Industry's City, State, Regional, Territorial Pest Control Associations Currently Number 52

There are presently 52 pest control associations active in the U.S., Canada, and Hawaii — two more than a year ago. Listed below under each organization is its secretary and his or her address. Any association omitted from the list should send this information, plus meeting dates and names of other officers, to Pest Control magazine, 1900 Euclid Ave., Cleveland 15, O.

Alabama Pest Control Association:
Charles Rice, Sec'y
P.O. Box 345
Gadsden

Arkansas Pest Control Association:
David Anderson, Sec'y
P.O. Box 291
Little Rock

Pest Control Operators of Calif.:
Fred Switzer, Exec. Sec'y
942 S. La Brea Avenue
Los Angeles 36

Canadian Pest Control Association:
D. W. Sanderson, Sec'y
464 Dawes Road
Toronto, Ontario

Connecticut Pest Control Assn:
Joshua C. Reynolds, Sec'y
Victoria Road
New Britain

Florida Pest Control Association:
R. L. Lewis, Sec'y
P.O. Box 6294
Daytona Beach

Georgia Pest Control Association:
H. L. Dorris, Sec'y
1802 North Ashley Street
Valdosta

(Georgia) Independent Pest Control Operators Association:
Mrs. G. H. Knox, Sec'y
2234 Buena Vista Road
Columbus

Hawaiian Pest Control Association:
Alvin F. Van Treese, Sec'y
2069 St. Louis Drive
Honolulu 16

(Hawaii) Professional Pest Control Association:
E. L. Forde, Sec'y
1930 Ala Moana Boulevard
Honolulu

Illinois Pest Control Association:
Frank B. Jeremia, Sec'y
9229 West Grand Avenue
Franklin Park

Indiana Pest Control Association:
Prof. J. J. Davis, Sec'y
Department of Entomology
Purdue University
Lafayette

Iowa Pest Control Operators Assn.:
William Kohlhaase, Jr.
4538 Izard Street
Omaha

Kansas Termite & Pest Control Assn.:
Henry Hastings, Sec'y
1151 Medford
Topeka

(Kansas) Society of Professional PCOs:
Dick Evans, Sec'y
P.O. Box 2351
Wichita 4

Kentucky Pest Control Association:
C. B. Smith, Sec'y
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114 Rapids Avenue
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233 St. Paul Place
Baltimore 2

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2619 Shenandoah
Royal Oak

(Michigan) Wolverine Pest Control Association:
Ivan C. Rogner, Sec'y
1006 East Indiana Street
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2738 Olive Street
St. Louis

(Missouri) St. Louis Pest Control Association:
Robert J. Race, Sec'y
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Webster Groves 19

National Pest Control Association:
Dr. Ralph E. Heal, Exec. Sec'y
250 W. Jersey Street
Elizabeth, N. J.

Nebraska Association of Pest and Termite Operators:
Marie Mason Connell, Sec'y
5809 Fontenelle Boulevard
Omaha 11

(Nebraska) Omaha Pest Control Association:
Mrs. M. F. Levenson, Sec'y
1407 Harney Street
Omaha 2

Nevada Pest Control Association:
Robert M. Barton, Sec'y
P.O. Box 3168
North Las Vegas

New England Pest Control Assn.:
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31 Dartmouth Street
Lawrence, Mass.

New Jersey Pest Control Assn.:
Edward Trennary, Sec'y
61 Lewis Street
Paterson

New Mexico Pest Control Assn.:
Mildred Armstrong, Sec'y
5308 Coal, Southeast
Albuquerque

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131 West 53rd Street
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Minneapolis 8, Minn.

Ohio Pest Control Association:
James King, Sec'y
578 Garfield Avenue
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Tom Graham, Sec'y
6601 North May Avenue
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Richard C. Nass, Sec'y
2879 N. E. Sandy Boulevard
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Pacific Northwest Pest Control Operators Association:
Merle Weaver, Sec'y
4717 N. Interstate Avenue
Portland 11, Oregon

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Harry Egner, Sec'y
5918 Lansdowne Avenue
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Weber College
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Virginia State Pest Control Assn.:
Luther M. Church, Jr., Sec'y
Box 6066
Norfolk 8

Washington (D.C.) Pest Control Association:
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Washington, D. C.

Wisconsin Pest Control Association:
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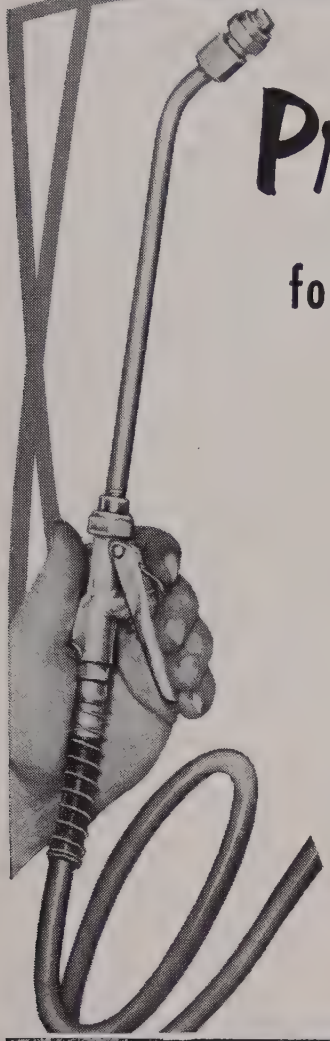

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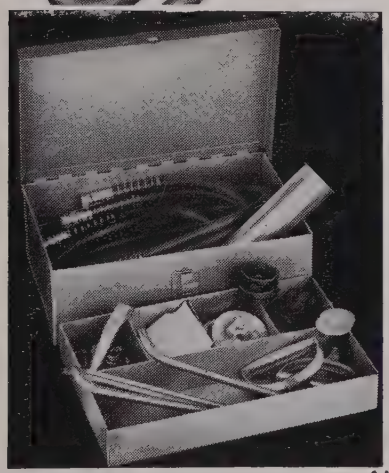

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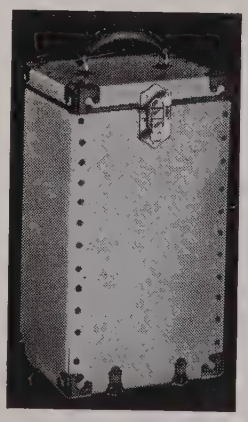

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UCLA, Purdue Termite Research Suggest New Control Methods Possible, NPCA Convention Hears

New concepts in drywood and subterranean termite control may evolve from experiments currently underway at the University of California, Los Angeles, according to Dr. Walter Ebeling, professor of Entomology there.

Dr. Ebeling appeared with Dr. John V. Osmun, head, Department of Entomology, Purdue University, on the termite control segment of October's National Pest Control Association Convention in Louisville, Kentucky.

The UCLA professor said strides have been made in the university's research with inert dusts that absorb the lipids of the drywood termite's epicuticle, with the result that the termite loses its only protection against desiccation and dies in two or three hours.

Dr. Ebeling has proved this protective lipid layer on termites is of such a nature that it can be absorbed without the need for abrasion of the epicuticle.

"Once drywood termites are placed on lightly dusted blocks of wood, they dry up and shrivel to a small fraction of their normal size," Dr. Ebeling said. "Certain highly sorptive clays were found to be more effective than other diluents."

Lists Clays Most Effective

He identified most efficient clays as Olancha Clay, Pikes Peak Clay 9566, Attaclay, and Diluex A. Only the silica aerogels are more effective than these highly sorptive clays. Principal application of such dusts, if they prove practical, would be in attics and on rough wood frames of houses in construction, he advised.

The dust can be efficiently distributed to all inside wood surfaces by means of the blowers commonly used to circulate methyl bromide. An effective residue might be deposited in this manner to prevent reinfestation after fumigation, he indicated.

Asked if water could be used with the dust as a carrying agent, Dr. Ebeling responded "No."

"Sprays do not deposit suspended particles efficiently on wood," he explained. "Also, the dust does not adhere as readily to the termite's body when applied to wood as a spray."

In other UCLA laboratory research to control subterranean termites, Dr. Ebeling is similarily optimistic over experiments using cinders or sand as termite soil barriers. When particles of these two barrier materials measure 10 to 16 mesh (approximately one to two millimeters in diameter), they are too big for termites to dislodge, yet small enough that they cannot crawl between them. Larger particles may be used if they are tamped down to reduce space between them.

"Two inches of cinders under an earth fill porch has proved to be an effective barrier, when particles are of this 10 to 16 mesh size," Dr. Ebeling reported. "Sand barriers about one inch deep appear to stop termites in our experiments."

Chemical Barrier Research

In another simulated barrier experiment, this one using chemicals, researchers at UCLA have studied the effect of insecticide-treated Yolo Clay loam soil 17 months after treatment. Western subterranean termites were placed below the treated soil barrier in a glass test tube, where ability of termites to penetrate the soil could be studied visually.

"All insecticides commonly used in soil treatment prevented the penetration of the soil by the termites when used at or near commonly recommended concentrations," Dr. Ebeling remarked. "However, some insecticides allow minor exploratory probings by termites.

"Dieldrin was shown to have some vapor toxicity effect on the termites under treated soil. Long-term field experiments may demonstrate the true value of this added vapor effect in extending the termite barrier for some distance below the treated soil."

Research into termite habits and control was the NPCA Convention topic of Dr. John Osmun, left, head of the Department of Entomology, Purdue University, and Dr. Walter Ebeling, professor of Entomology at the University of California, Los Angeles.

Responding to a question from the floor, Dr. Ebeling said placement of wood bait above the treated soil in the glass test tube, to attract termites upward, would probably have little effect. He said termites have a natural tendency to climb upward anyway. Additionally, applicator sticks are stuck down through the soil in the vial to serve as food, and termites follow them up.

Immobility, Mortality Studies

UCLA tests also are underway to determine the period of time needed to obtain 50% immobility or paralysis and 50% mortality with insecticides against the Western subterranean termite. It was emphasized that these tests refer only to initial effectiveness and do not necessarily indicate the relative long-term efficiency of the insecticides in the soil.

Using an MPI (period for 50% immobility) as the criterion, insecticides tested, in order of their effectiveness at 1.0% concentrations, were lindane, DDT, dieldrin, chlordane, pentachlorophenol, toxaphene, sodium penta-

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chlorophenate, and sodium arsenite. Dr. Ebeling said lindane demonstrated an extremely high initial toxicity.

In the same tests, but with insecticides at concentrations of 0.12% and lower, the order of efficiency was lindane, dieldrin, chlordane, DDT, toxaphene, pentachlorophenol, sodium pentachlorophenate, and sodium arsenite.

At 1.0% concentrations, with MLP (period for 50% mortality) as the criterion, chemicals were ranked in the following order, based on their killing qualities: pentachlorophenol, sodium pentachlorophenate, lindane, DDT, dieldrin, toxaphene, chlordane, and sodium arsenite. With 4.0% concentrations, the order of efficiency was pentachlorophenol and sodium pentachlorophenate, lindane, DDT, sodium arsenite, toxaphene, dieldrin, and chlordane. The order at 0.12% concentration was pentachlorophenol, lindane, DDT, dieldrin, toxaphene, sodium pentachlorophenate, chlordane, and sodium arsenite.

"In these studies," Dr. Ebeling said, "we found sodium pentachlorophenate and pentachlorophenol slow to paralyze but quick to kill after paralysis. However, once paralyzed, the termite never recovers. Therefore, the MPI, or immobility factor, may be the most significant criterion of effectiveness. A material that paralyzes rapidly may prevent penetration of the treated soil barrier by 'suicide squads' of termites."

Dr. Ebeling said lindane, dieldrin, and chlordane can be greatly reduced in concentration without much reduction in their initial effectiveness in laboratory tests, but pentachlorophenol and sodium arsenite are "ruined" by even a slight dilution. Therefore, higher initial concentrations are naturally required to assure long-term effectiveness in the soil. DDT and toxaphene are intermediate in this respect, and published literature, he observed, shows that, except in very high concentrations, they do not have a good record in long-term field experiments, such as those conducted by the U.S. Forest Service.

Pre-Construction Slab Treatments

UCLA has also gone into the field with its subterranean termite barrier research using insecticide emulsions and solutions. Experiments have been made in pre-construction soil treatment on 12 tracts with slab-type construction, as well as on 10 tracts where homes of conventional joist-type construction are being erected. All are in former orchard areas in California, where uniform conditions exist. Observations on the treated houses will continue for an indefinite number of years, Dr. Ebeling commented.

He said nine insecticides are being used on these tracts at concentrations suggested by the manufacturers. They are 0.3% dieldrin, 0.5% lindane, 0.5% diazinon, 1.0% chlordane, 1.0% DDT, 1.0% pentachlorophenol, 2.0% toxaphene, 2.0% sodium pentachlorophenate, and 5.0% sodium arsenite. The program will soon be expanded to include other insecticides. The general rate of application is one gallon to every 10 square feet, but special attention is paid to certain critical areas.

This leaves a "pretty thin" layer of treated soil in most areas, Dr. Ebeling said, limiting

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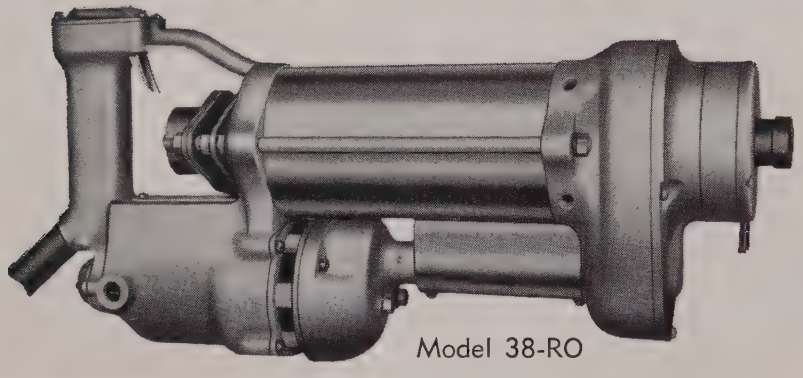

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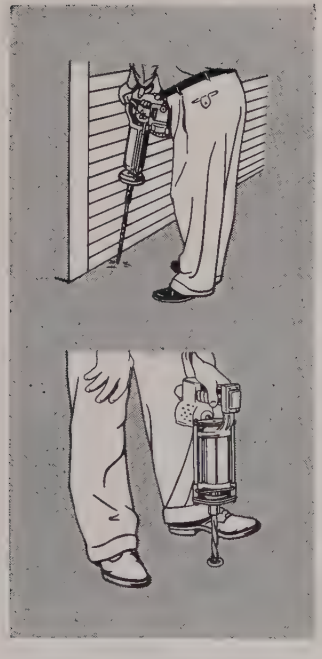

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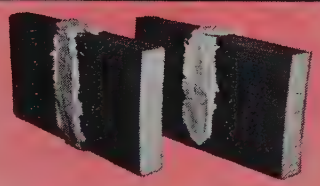
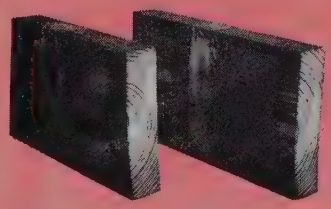


Southern Yellow Pine penetration test shows WOODTREAT-TC on first day of application.



Four days later. Note diffusion of Penta and oil from point of application to end of plank. Dried crust is almost ready to flake off or be brushed off.

Cross section of above boards at point of application. Penta has made almost complete penetration in 4 days!

Hundreds of PCO's are already calling new WOODTREAT-TC the *greatest advance in years* for controlling termites, wood borers and decay!

Results as well as user acceptance are phenomenal. This patented paste-like oil-in-water emulsion—containing 10% Penta by weight—is quickly, easily applied by brush or paddle. Held in suspension until deeply absorbed in the wood, the Penta penetration is equal to 20 brush coats of 5% Penta—retention is 6 to 11 times greater than with brush-applied liquid formulas!

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penetration of the chemical into the soil from ½ to 1 inch.

In addition to the basic experiments already described here, UCLA is attempting to see how insecticide-treated vapor barriers affect termite attack. Insecticides are being added to asphalt emulsions, containing about 60% asphalt. These emulsions are especially prepared so they adhere well to surfaces such as concrete or metal and so they have sufficient elasticity to permit them to contract or expand without breaking away from the surfaces to which they adhere. Unlike some asphalts, they are impervious to water vapor.

They are sprayed on the ground with an air-pressure type applicator connected to a 50-gallon tank. Dr. Ebeling plans to determine the rate of passage of water vapor through the slab where the combination vapor- and insecticide-barriers have been used.

Osmun Reviews EDB Research

In his portion of the termite program at the NPCA Convention, Purdue's Dr. John Osmun described field research with ethylene dibromide at Purdue. Tests there, he said, are concerned essentially with (1) movement of ethylene dibromide beneath slabs in soil types most common in the Midwest, and (2) determining if EDB is more effective when applied as a technical material or in an oil solution.

"One of the most important considerations in EDB fumigation of slabs is the nature and condition of the soil beneath the slab," Dr. Osmun stated. "This pertains primarily to the type of soil, its moisture content, and its porosity. Variations in these factors affect movement of EDB in soil and in some cases may even rule out the use of this fumigant."

To simulate concrete slab conditions for these experiments, 48 field plots were set up with silt loam, black loam, sandy soil, and gravel. Each "pseudo-slab" was surrounded by a trench 18 inches deep and then covered with a polyethylene blanket that covered the top and sides of the plot to the depth of the trench.

Because confused flour beetles react to EDB in much the same manner as termites do, they are being used in these experiments to determine the greatest distance EDB will move in each soil type and still remain toxic. Beetles are placed in test rods and exposed to the fumigant at distances varying from 6, 12, 18, 24, and 30 inches from the point of initial injection.

In each experiment, 1.75 fluid ounces of actual EDB, amounting to ¼-pound of actual material, was introduced under the slab. To determine degree of fumigant spread, Purdue researchers drew out cores or samples of soil from beneath the top covering of the soil. These were then taken to the university's bio-chemistry laboratories, where the extent of chemical diffusion from point of injection could be measured.

Although tests were not entirely complete when he gave his report to the convention, Dr. Osmun said preliminary research has shown that EDB as a technical material and EDB in an oil solution spread six inches from the point of initial injection in the silt loam field plot, which had a relatively high clay content. On black loam soil contain-

(Continued on page 30)

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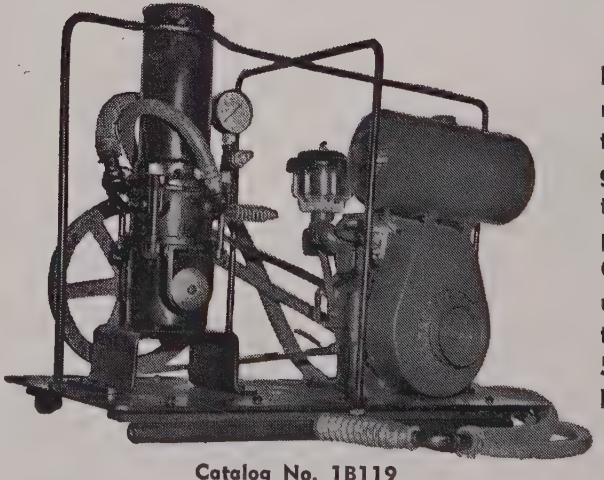

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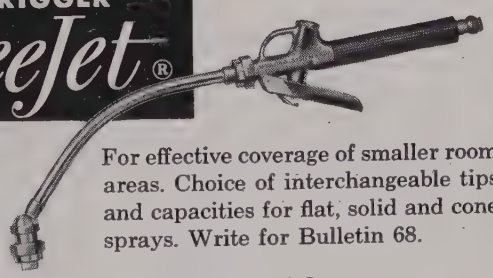

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An incentive plan can boost company income and stimulate better morale among servicemen. But before operators undertake such a program, they should know how to recognize and solve

Some Problems of Incentive Planning

by

WALTER O. BLANK and **MAX CARASSO**

President and Vice President, Respectively
Abalene Pest Control Service, New York City

The modern incentive system differs from the old time "piece work" system in only one significant detail. But it is this one detail that makes all the difference in the world between the exploitative, justly hated "piece work" system and the plan which, in one form or another, is now found in a large segment of American industry.

The difference is this: the modern system starts not from the heartless zero earnings of the late unlamented piece work system, but from a living wage. Using this living wage as the focal point, modern business tailors its incentives to fit the requirements of the specific industry, and company, concerned.

Such plans find their simplest and most popular application in the industrial production of items where quantity of output is highly dependent upon individual effort. An exception must be noted here for a few industries in which the memory of the horrible exploitation once fostered by the piece work system is still fresh in the minds of union leaders. In these industries anything bearing the remotest resemblance to piece work is frowned upon. But with these few exceptions, it is obvious that where the individual's output can be directly measured, a bonus for increasing that output will be desirable for both management and labor.

In some industries the products, or even the components, are so large or complex that the increase or decrease in output cannot be identified with any individuals. In such cases, "team bonuses" or "group bonuses" have been used with some success, though here, since the result is dependent on the congeniality, co-operativeness, and smooth functioning of an entire group, the gains have not been as uniform as in the industries where the individual's product can be readily measured.

Of course, even in industries where incentive systems work best in the production departments, some employees are left out of the system because their work is not directly concerned with production. Such employees are those in the engineering and maintenance departments, in the office, etc. Since the morale of such employees may be adversely affected by this denial of incentive opportunities enjoyed by their fellow workers who happen to be on the production line, many companies have tried to make up for it in one way or another. Among the methods tried, profit-sharing has been most general. In this method, a portion of the company profits, usually above a stated amount, are set aside for distribution to employees. The value of such systems, especially where the number of employees is large and the individual contribution to the final result is correspondingly small, is still open to question.

In Abalene, as a matter of fact, we were never convinced of the usefulness of the general profit-sharing method. It took us nearly five years, from time we established our very successful incentive system for servicemen, to work out an acceptable incentive system for our office staff. After one year of operation, the results of our office incentive system are still too indefinite to warrant recommendation.

Merit in Plan for Servicemen

It is the highly satisfactory success of our servicemen's incentive plan, however, that leads us to recommend adoption of some form of incentive plan by others in our industry. While we cannot reveal exact details of our own plan—and in fact this is unnecessary, since every company must have a plan suited to its own circumstances—there are certain principles and pitfalls which must be kept in mind before any attempt to set up a plan is made. With these understood, we feel any company, that is willing to invest the necessary time, thought, and effort, can come up with a plan that will be as satisfactory for that company, as our own plan has been for us.

Setting Up the Plan

Most pest control work, apart from termite control or fumigations, is performed through an individual operator on each job. Therefore, it shares with many

---

Because a Reader Asked . . .

I've read with interest the fine article by Walter Blank and Max Carasso on their Week-Month Synchronized Calendar in the August issue of *Pest Control.*

In the third paragraph of this article the authors mention that it is desirable to establish the average ratio of travel to working time when one has an incentive plan that requires considerable travel. I wonder if you can tell me how travel affects the operation of an incentive plan?

Anthony Pescop

Chicago, Ill.

In order to get the answer to reader Pescop's question Pest Control *magazine asked it of the authors. They advised us, "You asked a good question. Unfortunately, it takes another article to answer it." Their "answer" is the article which appears on this page.*

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REPORT

NUMBER 4

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- **Crickets**
- **Fleas**

Spray or paint with hand or power equipment where insects are seen or hide. Treat such places as baseboards, inside cabinets, under sinks, drainboards, stoves, storage units, in cracks and crevices, behind shelves, in basements and attics and so forth. Most surfaces - including metal - so treated, will continue to kill these insects for several weeks. Treat thoroughly and repeat as necessary.

- **Moths**
- **Carpet Beetles**

Clean and spray thoroughly to reach all hiding places. Clean and brush fallen articles. Hold sprayer 2 feet from articles sprayed so as to thoroughly moisten, paying particular attention to seams and folds. Allow sprayed articles to dry completely before using. Repeat applications every 30 days unless articles are stored in moth-tight containers previously cleaned and sprayed with the above mixture.

- **Bedbugs**

Take beds, dressers and other furniture apart and thoroughly spray slats, springs and all cracks and crevices. Thoroughly spray entire mattresses, especially seams and tufts, and allow to dry completely before using. Spray all cracks and hiding places in rooms—behind woodwork, loose wallpaper, picture frames, molding. Repeat applications as necessary.

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production industries, the advantage of simplicity; the individual's output can be readily measured. The quality of the output, of course, cannot be as readily controlled, but we may assume that, if too many complaints come in, the serviceman is discharged as lazy, careless, or incompetent. On this assumption we can accept the quality as meeting the standards maintained by each specific company, and we are concerned only with quantity.

However, service work usually contains one complicating factor not found in industrial production, i.e., travel time, generally of a variable character; and, more often than not, having no relation to the size and nature of the job. To a certain extent, of course, the relation does exist. In a metropolitan area, for example, the average travel time between apartment houses, or between restaurants, will be less than the average travel time between factory buildings. But since the relationship is undependable, it does not simplify, but complicates, the problem. This factor, as we know, enters into job pricing, and different companies handle this aspect of the problem in their own ways. Some add the estimated travel time to the pricing when quoting on a job; some ignore it on the assumption they will get other jobs nearby, etc.

Unfortunately or otherwise, when setting up an incentive system, this travel factor can neither be individually added nor generally ignored. It must be faced up to and dealt with at the outset, because it is very difficult, if not impossible, to adjust later on. Too high an estimate of travel time may result in work quotas being set too low, and in servicemen being generally overpaid, thereby weakening the company's competitive position. Any attempt to correct this at a later date would reduce servicemen's accustomed earnings and create wholesale disaffection, if not complete loss of confidence in the company by its servicemen.

On the other hand, too low an estimate of travel time may result in such high work quotas as to make the incentives pointless, if the proffered rewards require more effort than the average man is willing to make.

Benefits Must be "Rational"

In short, the travel time factor must be carefully estimated, keeping in mind that an incentive plan must first of all be rational. This means rewards of work must have some reasonable relation to the type, as well as the quantity, of work performed. Theoretically, there should be no limit to the earnings of the extraordinary worker. If an employee desires to work three times as much as the average employee, nothing should prevent him from earning three times as much as the average employee, even though this brings his salary above that received by his supervisor. But it is obvious if the standards are set so low that an average employee can earn far above the normal wage for his type of work, then you will have a situation where you will have to pay unusual compensation to supervisors in order to keep them in tandem relation and maintain supervisor morale. In a competitive world, such generalized generosity would do your employees no good in the long run. Your company would eventually go broke and your employees lose their overpaid jobs.

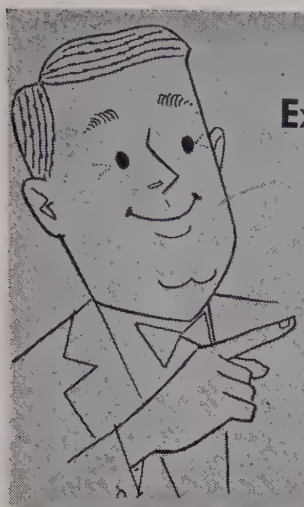
Bonus a Fundamental Incentive

On the other hand, an incentive plan will completely fail in its purpose if the goose hangs out of reach. If possible, some bonus, however small, should be available for every employee who will make an honest effort, no matter how weak or inefficient that effort may be. The obvious reason for this is, that in a large company, even the sum of many weak and inefficient efforts may add up to a considerable amount. A more compelling reason is that any gap between performance and reward may make the effort psychologically unattractive. For example, if your company's incentive system provides a 10% bonus on all work done in excess of $800 per month, this would probably be of very little interest to the fellow with a $700 route. If he took on another $150 of work per month, this substantial amount of additional work would increase his monthly earnings by only $5.

Routes of Substandard Size

Unfortunately, it is not always possible to eliminate the gap. For example, if a new or substandard route should be open in a high wage area, it might be necessary to hire an employee at a starting salary considerably higher than is justified by the size of the route. In some cases, this might be avoided by eliminating that route and dividing the work among the adjoining ones. However, when, as in Abalene, some routes cover very extensive areas, this is not always possible. Sometimes other reasons, not of a geographical nature, require the maintenance of a route of substandard size. Rather than make

"I am not fired . . . I quit!"



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any changes in a well-functioning incentive plan, it is usually advisable simply to tolerate the unsatisfactory local situation, pending a change in conditions. This has been the policy with Abalene.

Plan Must Be Fair

A second requirement of an incentive plan, no less important than the first, is that it must, (insofar as conditions within the company's control permit) be absolutely fair and equitable. If it is not—that is, if it appears to operate in favor of certain individuals — it will lose most of its incentive value. The reason is that in such a case employees will tend to concentrate their efforts on gaining favor rather than doing more work.

In Abalene, because of the wide diversity in size and character of various routes, equitability was a real problem, and again the travel time factor complicated things. It is easy to say, and to a degree it is true, these things "average out". For example, a serviceman with low-priced jobs such as small stores will waste less time in travel than the man who has high-priced industrial jobs, farther apart. But correctness of the generalization does not solve the specific problem. An overestimate in the ratio of travel time may result in overpayment of the man with an urban route; an underestimate of travel time may result in underpayment of the man with the rural route. One solution might be to have two travel time estimates; one for city PCOs and one for country PCOs. If there is any pest control company that can accurately differentiate its work into these two types, this alternative would provide a simple solution to the problem. Suffice it to say that for Abalene, with its routes spread over most of New York and the New England states, this solution was not possible. One travel time formula, applicable to all our operations, had to be determined. It took, as the expression goes, a "heap of doing."

Sales-Service Combination

Our company encountered still another problem in connection with travel time, but this one will be automatically escaped by companies whose servicemen do not do the selling. In Abalene, servicemen do most of the selling, and the problem was that of synchronizing the serviceman's interests with that of the company. It is possible for a serviceman's percentage bonus to be so high that a given job might be profitable to him even if unprofitable to the company. For example, if the average serviceman values his time at $1.80 per hour and his percentage bonus is 30%, then, on a job which would take him an hour including travelling time, he would probably quote around $6 per month as the contract price. Whether this price would be profitable for the company would depend on how accurately the company had evaluated travel time, with its attendant expenses in direct ratio to distance. A price that would be satisfactory for an urban pest control company might be far too low for a rural one. To make a long story short, it is self-evident that if a serviceman's percentage compensation is too high, he may be tempted to take jobs at a price too low to be profitable for the company. Conversely, if his percentage compensation is too low, he will tend to overbid, and the company will lose jobs to competitors.

Very few companies are likely to be in the peculiar position of Abalene with respect to complexity of field conditions and problems. Yet the incentive system which we established early in 1951 has operated satisfactorily, with very few and slight amendments, ever since. Our labor cost as a percentage of income has remained within 1%, plus or minus, of its pre-Korea ratio. Thus it is evident neither our company nor the servicemen have lost anything to the other. On the other hand, the earnings of individual servicemen have averaged 50% higher through the performance of more work, while the company has been able to meet rising per capita travel expenses by getting along with less servicemen than would have been required under the old system. This record should be an inspiration to other companies that are contemplating the establishment of incentive systems.

In conclusion, after you establish a ratio between your serviceman's travel time, expenses, and distance between calls on his route, you should make benefits equitable and always within reach. But be certain servicemen do have to "reach."

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What's NEWS In The Industry

A public relations program to acquaint the public with the importance of scientific pest control is being sponsored by the New York Pest Control Association. First project was a "War Council on Resistant Cockroaches," held in New York November 26. Talks were given by chemical company entomologists and sanitation officers representing Federal, city, and county health organizations. New York PCA officers shown planning the program in the picture above are, left to right, Joseph Harris, Guarantee Exterminating Co., vice president of the New York PCA and chairman of the Planning Committee; Ruth Millard, association public relations counsel; Stefan Rohdie, Excelsior Exterminating Co., Director of the Planning Committee; Daniel J. Klein, Allied Exterminating Co., association president; and Dr. Arthur L. Brody, Pioneer Exterminating Co., chairman of the association's Public Relations Committee.

ARS To Accept Opinions on Proposed Labeling Curb

USDA's Agricultural Research Service will accept written views until December 31 on its proposed regulation which would restrain suppliers from implying Federal endorsement of products on commercial pesticide labels. (PC, Nov., p. 37).

The proposal, which would amend the Regulations for the Enforcement of the Federal Insecticide, Fungicide, and Rodenticide Act, would prohibit statements on labels of economic poisons that directly or indirectly infer recommendation or endorsement of the products or their ingredients by any Federal agency.

"Federal regulations already state that an economic poison or device will be considered misbranded if its label implies the commercial product is recommended or endorsed by any agency of the Federal Government," an ARS spokesman said. "However, statements have appeared on pesticide labels claiming their formulas or active ingredients are recommended by USDA. Such statements tend to imply the product itself is USDA-endorsed. It is to avoid such misunderstanding on the part of the public the new amendment is proposed."

Interested persons may submit written views to Plant Pest Control Division, Agricultural Research Service, USDA, Washington 25, D.C.

BRAB Plans "Think" Session

The Building Research Advisory Board will hold a special "think" session February 11-12 for all BRAB members and former members. Principal topics of discussion will be problems confronting the building industry, including operation and ownership of buildings, new product research, housing research, etc.

Calif. PC Board Elects Delk

Charles C. Delk, Delk Pest Control, Fresno, California, has been elected president of the California State Structural Pest Control Board, a five-man body appointed by the governor to help enforce the state's structural pest control law. Delk's term will cover fiscal 1957-58. John Fobes of Fobes and Grey Pest Control, Los Angeles, was voted vice president.

BRAB Readying New Study Of Termites, Decay for FHA

The Building Research Advisory Board is currently drafting a new two-part study that will supplement an earlier one it prepared for use by the Federal Housing Administration in the FHA's Minimum Property Standards revisions. (PC, July '56, pg. 46.)

William H. Scheick, BRAB Executive Director who made the announcement, said the two parts will cover "The Use of Preservatively Treated Wood for Termite Protection" and "The Effectiveness of Vapor Barriers Between Sill Plates and Masonry Foundations." The original study, completed in May last year, is entitled "Protection Against Decay and Termites in Residential Construction."

In light of BRAB remarks in the original report that wood preservatives may not be economically practical as a termite barrier, Scheick said the present problem is to determine what amounts of preservatively treated wood are really necessary to afford adequate protection for various types of construction in certain geographical areas.

He said BRAB's Special Advisory Committee will report on (1) how much preservatively treated wood is necessary, (2) how wood should be treated, and (3) how cut ends of wood can be protected.

The second part of the new study will explain (1) what decay protection is given by a vapor barrier between the sill and foundation wall; (2) if it is practical to use a vapor barrier for this purpose, and, if so, what materials can be used and how they should be installed; and (3) if a vapor barrier can be substituted for any protective measures recommended in the original BRAB report, when and where it is permissible.

Asked by the editors of Pest Control when the FHA expects to have its new MPS revisions finalized, Neil Connor, Director of its Architectural Standards Division in Washington, D. C., said issuance probably will come late next spring.

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Effective . . . Any Time!

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AMERICAN CHEMICAL PAINT COMPANY

AMBLER, PA.

Makers of WEEDONE®—World's No. 1 Weed Killer

Chemicals ACP Processes

A TRUE STORY!

"More Profits Without Murder"

Call him Mr. PCO for short. When TABUTREX insect repellent was first mentioned to him, he said, "I want to **kill** bugs . . . not **repel** them!" Nothing could change his mind.

A few days later he called us. "Flies are eating the customers alive at the Chicagoland Fair," he said. "Can we use TABUTREX?" He could, and he did! As a result, Mr. Al Burns, Production Manager of the Chicagoland Fair, said this:

"Flies were greatly reduced, and they refused to rest on sprayed surfaces. Visitors were much less bothered with flies, and we were highly pleased."

Mr. PCO began to sell TABUTREX formulas for golf tournaments, fairs, sports events, etc. SALES BOOMED! Again he phoned:

"The zoo has asked for something to keep biting flies off animals. Will TABUTREX do it?" We suggested he try. Thereafter, the zoo used TABUTREX regularly and has recommended it to other zoos.

Mr. PCO then called on riding stables. "Nothing works on horses," they told him. "We don't want a spray . . . we're not going to be fooled again."

"Let me demonstrate," said Mr. PCO. He wiped TABUTREX on the horses' legs. *Flies veered away and stayed away.* Three out of four stables bought his TABUTREX spray. So did Kiddielands. Flies were annoying the ponies so badly that the operators wouldn't allow children to ride. TABUTREX put them back in business. Mr. PCO got more orders!

Mr. PCO is now making plans for the coming season. . . . Why don't you? Be sure to include TABUTREX in **your** plans for 1958!

Write for details on how you too can make TABUTREX pay big dividends . . . write

G Tabutrex* INSECT REPELLENT

*TRADEMARK

Glenn Chemical Company
2735 N. Ashland Ave. Chicago 14, Ill.

Calendar

(New York) Professional Exterminators Assn. Annual Dinner, Fraunces Tavern, New York City, Dec. 6.

Chemical Specialties Manufacturers Assn. 44th Annual Meeting, Hollywood Beach Hotel, Hollywood, Fla., Dec. 9-12.

North Central Weed Control Conference, Hotel Savory, Des Moines, Ia., Dec. 10-12.

Eastern Pennsylvania Pest Control Assn. Monthly Meeting, Sylvania Hotel, Philadelphia, Dec. 12, 8:30 p.m.

Western Pennsylvania Pest Control Assn. Monthly Meeting, Roosevelt Hotel, Pittsburgh, Dec. 12, 8:30 p.m.

Arkansas Pest Control Assn. Monthly Meeting, Marion Hotel, Little Rock, Dec. 14, 10 a.m.

CDC Identification and Biology of Arthropods Training Course, Atlanta, Ga., Jan. 13-24.

North Carolina Pesticide School, College Union Building, North Carolina State College, Raleigh, Jan. 21-22.

Eastern PCO Conference, University of Massachusetts, Amherst, Jan. 22-24.

Purdue PCO Conference, Purdue University, Lafayette, Ind., Jan. 27-31.

Oklahoma PCO Conference, Oklahoma State University, Stillwater, Jan. 30-Feb. 1.

Southern PCO Conference, Washington Youree Hotel, Shreveport, La., Feb. 2-4.

Pest Control Operators Short Course Student Union Building, North Carolina State College, Raleigh, Feb. 4-6.

Entomological Society of America Southwestern Branch Annual Meeting, Shamrock Hilton Hotel, Houston, Tex., Feb. 10-11.

American Mosquito Control Assn. 14th Annual Meeting, Willard Hotel, Washington, D. C., Feb. 23-26.

CDC Insect Control Operational Training Course, Purdue University, Lafayette, Ind., April 7-11.

Chemical Specialties Manufacturers Assn. 44th Mid-Year Meeting, Netherlands Hilton Hotel, Cincinnati, O., May 19-21.

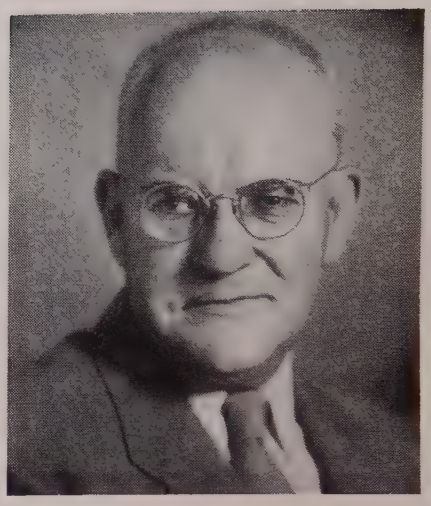
NPCA Termite Session

(from page 20)

ing more organic matter and a smaller amount of clay, technical material spread 12 inches while the oil solution moved only six inches.

In sandy soil, EDB technical was effective 18 inches from point of infusion, and the oil solution, 24 inches. Range of technical material in gravel, meanwhile, was two feet. No experiments have been made yet with the oil solution in gravel, he said.

Dr. Osmun stressed these measurements reflect maximum effective range of EDB and not necessarily its maximum movement through the soil. He urged that more attention be given to these soil conditions beneath slabs before an attempt is made to use EDB for termite control.



Justus Ward, new head of the USDA's Pesticide Regulation Section, Agricultural Research Service, succeeds Dr. Webster G. Reed.

Ward Heads Pesticide Regulation Section

Justus C. Ward, former assistant head of the Pesticide Regulation Section, Agricultural Research Service, USDA, has been appointed section head. He succeeds Dr. Webster G. Reed, who is retiring.

Ward has worked actively with all agencies concerned with safe use of pesticidal chemicals by the public.

His section is responsible for the proper registration and labeling of all new herbicides, germicides, insecticides, and rodenticides introduced on the market.

For over a decade Ward has cooperated with the pest control industry and has been a frequent featured speaker at PCO conferences and conventions.

Helena Whelan Leaves Prentiss

Helena A. Whelan, well-known sales representative to the pest control industry for Prentiss Drug & Chemical Company, New York, has resigned, effective early last month. Miss Whelan has been associated with Prentiss nearly 18 years. Her future plans have not yet been announced.

announcing ...a new formulation for PCO's

GEIGY DIAZINON 20S

(20% OIL SOLUTION)

for use with

deodorized kerosene

or other base oils

Pest Control Operators now have their choice of the Diazinon formulation best suited to their needs.

new **GEIGY DIAZINON 20S**
—for oil base sprays.

GEIGY DIAZINON 25E
—for water base sprays.

Approved label claims now include:

Roaches, flies, silverfish, fleas, ants, brown dog ticks, chiggers and lawn chinch bugs.

Geigy Diazinon 20S is now available from your Geigy distributor.

Geigy *pioneering in pest control*

GEIGY AGRICULTURAL CHEMICALS • Division of Geigy Chemical Corporation
Saw Mill River Road, Ardsley, New York

NEW

entirely different

PURPLE DEATH

kills rats and mice
gives you up to

52% PROFIT!

SELL IT IN YOUR RETAIL STORE
USE IT IN SERVICE OPERATION!

- 1 good feeding assures certain kill
- packed in "ready - to - serve" feeding stations
- each station sufficient to kill 6-8 rats, 10-15 mice
- activity usually ceases in 2-5 days if ample feeding stations are used.
- an entirely new bait in granulated form.
- bait contains odorless, tasteless toxic agent, thallium sulphate

Packed in cartons, 14 packs - 42 feeding stations - $2.84

Big quantity users: Purple Death can be packed under your own name for service work.

If credit not established, send references or check with order.

Excellent profit margins for distributors

Write Immediately For Details:

O.E. LINCK CO. INC.
Clifton, N. J.

VPI Pest Control Operators Short Course, at Virginia Polytechnic Institute, attracted over 100 industry, government, and university representatives to Blacksburg last month for three days.

Southern Conference Set For Shreveport, Feb. 2-4

The 1958 Southern Pest Control Conference will be held at the Washington Youree Hotel in Shreveport, La., February 2-4, according to program Chairman Paul K. Adams, Adams Pest Control, Alexandria, La.

On the technical program will be an address on latest developments in resistant roach control, followed by a panel of five PCOs who will tell what they do to control the species. A speaker on new rodent control developments and a discussion of rodent and ant identification displays will round out the indoor technical portion of the program. In the field, a typical termite slab treatment will be demonstrated.

Business speakers will cover "Are You Really Making the Profit You Should?" and the "The Comparative Cost of Doing Business in the Southern Area."

Of general PCO interest will be an address on the efficient handling and storing of supplies and equipment in service vehicles. Dr. Ralph E. Heal, NPCA executive secretary, and Dr. Philip J. Spear, NPCA technical director, are scheduled to speak on progress in certification efforts, and highlights from the 1957 NPCA Convention.

Registration for the three-day conference, which is held in cooperation with the NPCA, will be $15. General chairman is G. L. Edwards, Redd Pest Control, Jackson, Mississippi; local chairman, Truman Thomas, the Anti-Pest Co.; and attendance and publicity chairman, J. R. Stuckey, Stuckey Termite Control, Ruston, Louisiana. Other committee members include Stanley McKenzie, McKenzie Pest Control, Lake Charles, Louisiana; David E. Anderson, Evans Laboratories, Inc., Little Rock, Arkansas; and Clayton Wright, C. Wright Associates, Dallas, Texas.

Complete program details will appear in the January issue of Pest Control.

Notebook

TIPS AND IDEAS FROM THE FIELD

Pillbugs and Sowbugs

by F. M. Fuller
Texas Agricultural Extension Service
College Station, Texas

Most PCOs should be familiar with the light gray to slate-colored plant-eating organisms that roll up into a ball when disturbed. These are called pillbugs and sowbugs, and they frequently feed upon roots and on tender portions of flowering plants above ground, either in nurseries or in outdoor yards. A favorite hiding place for them is at the base of plants, under boards, clods of dirt, and in damp places.

Pillbugs and sowbugs have segmented bodies with seven pairs of legs and reproduce by means of eggs kept in the marsupium (pouch) of the female for about two months. A brood consists of 25 to 75 young that do not leave the marsupium for some time after hatching.

In most cases, poison baits are most effective against them. There are many commercially-prepared baits on the market today, which give excellent control of these pests, but the old standby, poison bran mash, still does a good job. It consisists of:

Dry Bran	1 peck
Paris Green	¼ lb.
Molasses	1 qt.
Water	4 qts.

Ingredients should be thoroughly mixed together and the bait scattered around places pillbugs and sowbugs inhabit. Dusting an infested area with 5% chlordane, 5% DDT, or 2% lindane also is an effective control measure.

Now Available

PMP DRY MEAL BAIT

(ANTI-COAGULANT)

IN 200 LB. DRUMS

Now Donco offers pest control operators a new, ready-to-use PMP cereal bait! A special report on field trials of PMP baits, published by the U. S. Fish and Wildlife Service, states:

"The results of the area wide campaign were EXCELLENT! PMP food baits containing a concentration of 0.03% of the calcium salt of 2-Isovaleryl-1, 3-Indandione effectively control roof rats, Norway rats, house mice."

PMP Baits are Resistant to Insect Infestation

Write, wire or phone:

2-Pivalyl-1, 3-Indandione Dry Meal Bait also Available at $46.00 per 200 lb. drum
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DONCO, INC.

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TRADE MARK

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ENGLEWOOD, COLORADO
SUnset 9-0631

MGK

Roach Concentrate 933

This dual synergist pyrethrum concentrate, gives a high fast kill of all German, Oriental and American roaches.

Because it is relatively free of odor, because it meets M.I.D. requirements, and because it is non-toxic and safe when used according to directions, it is ideal for controlling roaches, including resistant roaches, in packing plants, bakeries, food warehouses, restaurants and homes.

Easily formulated and easy to use, it is both efficient and economical.

For high residual roach control we recommend MGK Repellent 11 be used in combination with MGK Roach Concentrate 933. Here is the ideal roach spray. 933 will kill all roaches present and MGK Repellent 11 will set up a residual barrier which roaches will not penetrate.

Our laboratory tests indicate this residual repellency will extend from four to fifteen weeks. Like 933, MGK Repellent 11 is non-toxic when used according to directions.

MGK

Repellent 11

MGK McLAUGHLIN GORMLEY KING Company

McLAUGHLIN GORMLEY KING CO.
1715 S. E. Fifth Street • Minneapolis, Minnesota

• Please send your bulletins on the proper use of sprays containing MGK Roach Concentrate 933 and MGK Repellent 11.

*Name*_____

*Address*_____

*City*_____ *Zone*____ *State*_____

Primer

Questions and Answers: 6

Roach Control

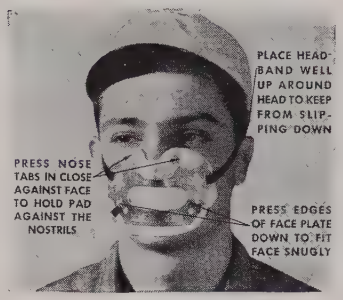
Your December Questions and Answers column, prepared in cooperation with some of the country's top authorities on the habits and control of roaches, will help you discover how much you know about these insects. Study each question thoroughly and mark the answer you think applies best. Then turn to page 38 to see how well you did. A score of 19 to 20 correct is excellent; 17 to 18, good; 16, fair. If your count fell below 16, your memory could stand a little refreshing. For variety, some of the questions below are true or false; others have multiple choice answers. This installment concludes the present bi-monthly series of Questions and Answers features that began in February. Your January Primer will open a new monthly series on entomology terms and definitions prepared by Purdue University especially for PCOs.

1. Smallest of the common household roaches is the:
   a. Oriental roach____ b. German roach____
   c. Australian roach____
2. Largest of the domestic roach species is the:
   a. Brown-banded roach____ b. American roach____
   c. smoky brown roach____
3. A common name by which the German roach is known is:
   a. Croton bug____ b. water bug____ c. sewer bug____
4. In some areas both Oriental and German roaches have shown resistance to the chlorinated hydrocarbon insecticides.
   True____ False____
5. Where German roaches are resistant, a good control chemical is:
   a. parathion____ b. toxaphene____ c. diazinon____
6. The chemical generally accepted as the best control weapon against non-resistant German roaches is:
   a. chlordane____ b. lindane____ c. DDT____
7. Phosphorus paste is recommended for German roach control:
   True____ False____
8. Roach resistance to the organic phosphates has not developed anywhere in the world.
   True____ False____
9. Many experts believe roach habits change when they become resistant:
   True____ False____
10. Oriental cockroach populations are reported to be on the increase in many parts of the U. S.
    True____ False____
11. Female roaches deposit egg capsules near a food source and give no further attention to offspring.
    True____ False____
12. The Oriental roach has an annual life cycle with most adults emerging in the spring.
    True____ False____
13. Full grown American roaches often reach 2¼ inches in length:
    True____ False____
14. The roach that often travels through sewer pipes is the:
    a. German roach____ b. Brown-banded roach____
    c. Oriental roach____
15. The German roach completes its development (egg and nymphal stages) in:
    a. 30 days____ b. 90 days____ c. 1 year____
16. Roaches are known to feed on:
    a. bedbugs____ b. ants____ c. spiders____
17. Which of these chemicals is **not** recommended for cockroach control:
    a. dipterex____ b. arsenic trioxide____ c. diazinon____
18. Chlordane is usually applied indoors as a wettable powder:
    True____ False____
19. Proper sanitation inside a building has little to do with roach control:
    True____ False____
20. There are reported cases of large-scale roach migrations without apparent cause:
    True____ False____

Turn to page 38 for answers

MARTINDALE

PROTECTIVE MASKS
give real wearer comfort


PLACE HEAD-BAND WELL UP AROUND HEAD TO KEEP FROM SLIPPING DOWN
PRESS NOSE TABS IN CLOSE AGAINST FACE TO HOLD PAD AGAINST THE NOSTRILS
PRESS EDGES OF FACE PLATE DOWN TO FIT FACE SNUGLY

Clean, cool, with large filter area for ease of breathing. Adjustable to all head sizes. Light weight - less than ½ ounce. Gives protection against over 400 nuisance dusts, non-toxic dusts except free silica. Cotton pad refills.

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FLAME CHEK, which can easily be applied by spraying, falls very easily within the scope of the modern PCO's operations and can add immeasurably to his volume and his business reputation.

FLAME CHEK has received the commendation and approval of fire departments all over the country. Why not write us today and investigate the opportunities that are available through offering a **"FLAMEPROOFING SERVICE"** with **FLAME CHEK.**

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5 YEAR GUARANTEED
MOTH CHEK MOTHPROOFER

Many pest control operators are realizing extra profits by operating our 5 YEAR GUARANTEED MOTH CHEK MOTHPROOFING SERVICE. MOTH CHEK has been proven effective in numerous independent laboratory tests.* CHEK CHEMICAL PRODUCTS COMPANY, INC. issues a 5 year warranty against moth damage and assumes 100% responsibility in the event of a claim of moth damage.

* Results of tests available on request.

ALSO NOW AVAILABLE A COMPLETE LINE OF PCO CHEMICALS

Write today for complete information at no obligation.

CHEK CHEMICAL PROD. CO., INC.
Dept. PC 10, 89 Madison St., Newark 5, N.J.

Index to Public Agencies

(from page 10)

preservation, a subject of direct interest to the industry, the **Forest Products** Lab has been the world leader.

STATE AGENCIES

Colleges, Extension Services

In the introduction to this paper, reference was made to state colleges and the important part they play in educational activities conducted for the pest control profession.

One of the most important contributions that can be made to any industry is to bring to its members the latest technical advances, management improvement methods, and refinements in business administration. PCO regional conferences, short courses, and other forms of education are carried on largely by **state colleges and universities** under the guidance of faculty members, extension services, and experiment station personnel.

State educational institutions contribute considerably in direct services such as identification of insects, advice on chemicals and their formulations, and advice on unusual pest problems. Much of this is done too by **extension entomologists.** They usually work at land-grant colleges in cooperation with the Extension Service of the U. S. Department of Agriculture. It is this unit's responsibility to keep in touch with technical advances in the state and make the information available to the public.

The **County Agent's Office** may seem a bit out of place in this discussion. Yet this is one of the best sources of information available to PCOs. The county agent may or may not be intimately familiar with pest control. However, he is in close touch with the Extension Service and is, therefore, supplied with up-to-date information. There is one in every town of any size.

There are **other state organizations,** such as the Department of Health and the Department of Agriculture, activities of which have a bearing on the PCO. Since these organizations and their activities vary somewhat from state to state and the degree of their influence on the industry varies, no attempt will be made to discuss the subject further.

COMMUNITY AGENCIES

In the community where the PCO lives are individuals and agencies which can be of considerable help to him. The city or county health services, hospitals, health associations and similar organizations will offer their time and services when called upon. Of outstanding importance currently is the establishment of **Poison Control Centers** throughout the country. This move, sponsored by medical and public health workers, is intended to reduce the large number of deaths caused by misuse of poisonous materials. Centers will aid local physicians with advice, and prompt and accurate diagnosis and treatment of poisoning. They will collect statistics on poisoning cases and will thus be in a position to conduct educational campaigns for poison prevention.

A poison control center may be a doctor representing a local medical society or a fully-staffed, 24-hour-a-day unit located in a local hospital or clinic. The NPCA has publicized this campaign and has sent to its members a list of the centers and their location. PCOs can benefit considerably from this program, and, additionally, lend to its effectiveness and the welfare of the community.

Conclusion

In the foregoing discussion an attempt has been made to show how various public agencies help the pest control profession. It by no means includes every unit of each public agency nor does it attempt to evaluate the contributions. Its aim has been to inform PCOs sufficiently so that they may seek out these agencies to their advantage.

During the 10 years the writer spent at the center of wood products insects research at Gulfport, Mississippi, only a handful of PCOs visited the laboratory and experimental area. The number of visiting scientists were in the hundreds. Operators could profit a great deal from periodic visits to various institutions such as the entomology department of a college and an agricultural experiment station; the Agricultural Research Center in Beltsville, Maryland; the Communicable Disease Center and the Stored Products Insect Lab at Savannah; the Agricultural Research Service Laboratory at Orlando, Florida; or the Forest Insect Laboratory at Gulfport, Mississippi. These units will indeed welcome visits.

In closing it would be well to emphasize a point handled rather modestly throughout the paper: many of the contributions referred to have come from research and other efforts made specifically for the pest control industry. And, in considering the subject, one finds it difficult to imagine how all this could have been done without the vision, the persistent effort, and driving energy of the National Pest Control Association and its leaders, of industry, and the public servants who cooperate with them.

This amazing FUMO-KILL insecticide is by all qualifications a leader in its field.

Two Way MONEY MAKER! **FUMO-KILL**

USE IT! SELL IT!

FUMO-KILL has the following advantages:

EASY TO USE: Requires no Special Equipment.

ECONOMICAL TO USE: Two ounces fumigates up to 6,000 cubic feet.

FUMO-KILL is truly the modern method of insect extermination. Light match to contents of can, will produce fumes—NO FLAME. Non-hazardous. This amazing FUMO-KILL insecticide has been tested, and found effective against most types of household pests.

The New Effective Fumigant That Will Kill

Mosquitoes, Flying Moths, Spiders, Silverfish, Flies, Wasps, and Exposed Waterbugs, Roaches, Bedbugs, and Ants.

Follow instructions on can for best results.

FUMO-KILL can be obtained in 2 oz. (enough for up to 6,000 cubic feet)—4 oz. and 1-lb. cans.

Cost of 12—2-oz. Cans ....$7.50 per doz.
Cost of 12—4-oz. Cans ....$13.50 per doz.
Bulk .....$4.50 per lb.

Delivery Charges Prepaid

For complete information write or phone today

Available Only From **MAR-MEL *Products, Inc.***

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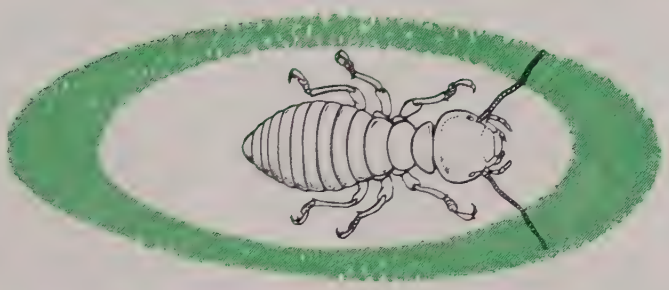
You can't afford to guess about termite control!



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GUARD YOUR REPUTATION WITH CHLORDANE

It has been proven that Chlordane gives effective termite control for 10 years, or longer. Chlordane is the most economical chemical known for the control of termites, and SS 56% TC is the most economical Chlordane Concentrate that you can buy.

SS 56% TC CHLORDANE CONCENTRATE FOR HOUSEHOLD PESTS AND TERMITES

One gallon of SS 56% TC contains 5.38 pounds of Chlordane.
One and one half pints of SS 56% TC contains 1 pound of Chlordane.
One gallon of SS 56% TC makes 32 gallons of a 2% Chlordane emulsion.
One and one half gallons of SS 56% TC makes 48 gallons of a 2% emulsion or 96 gallons of a 1% emulsion for the control of termites.
Exactly 4 ounces of SS 56% TC makes one gallon of a 2% emulsion for the control of household pests. It's easy to measure accurately. It's convenient to carry in 4 ounce bottles.

PRICES
SS 56% TC CHLORDANE CONCENTRATE

5 Gallon Pails at $4.95 per gallon	$ 24.75
30 Gallon Drums at $4.80 per gallon	144.00
55 Gallon Drums at $4.70 per gallon	258.50

Freight Prepaid On 15 Gallons Or More
2% Discount If Check Is Sent With Order

LARGEST STOCK OF RODENTICIDES
For Pest Control Operators

Senco Phosphorus Paste
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Arsenic Solution
Microfine Arsenic
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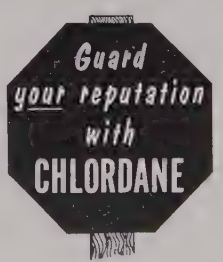

NOW! BE SAFE! BE SURE . . . ORDER SS 56% CHLORDANE CONCENTRATE TODAY

Write on your letterhead for a complete pricelist of Senco Products, and Senco News.

SENNEWALD DRUG CO., INC.

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Extra Business--
STEADY PROFITS!
with
SANI-AIR

More and more Pest Control Operators are adding to their profits without adding to their labor by providing SANI-AIR SERVICE along with their regular monthly exterminating service.

SANI-AIR SERVICE is the finest method of deodorizing and neutralizing all unpleasant odors and providing fresh, sanitary air. Generally installed in rest rooms, but also used anywhere unpleasant odors exist. The SANI-AIR Electric Deodorizer is sturdily built, electrically controlled for maximum efficiency and dependability. Installed at no charge to the customer, the SANI-AIR Electric Deodorizer is serviced regularly every month. Requires only a minute to service—just a change of refill.

This extra business gives you steady, sure profits month after month; and the dependable SANI-AIR Electric Deodorizer, combined with the customer-approved liquid or disc refill, assures you complete customer satisfaction.

Perfect for use in any commercial, industrial, institutional or residential building. SANI-AIR banishes all disagreeable odors, continuously and positively. No other method works so effectively at so little cost. SANI-AIR refills —the finest on the market—are available in many highly pleasing scents.

The SANI-AIR Electric Deodorizer is guaranteed for one year, but actual experience shows there is less than ½ of 1% failure in five years continuous operation.

A SANI-AIR Electric Deodorizer is yours immediately on a 30 day free trial basis and samples of liquid or disc refills are free on request.

ASSOCIATED PRODUCTS, INC.
GLENSHAW, PENNSYLVANIA

Infestation Report

Contains pertinent portions of the Department of Agriculture's **Cooperative Economic Report**, material from university entomology departments and reports from readers. PCOs noticing infestations in their own areas are urged to communicate with **Pest Control** so their information may be added to this infestation report.

BLACK CARPENTER ANT
(Camponotus herculeanus pennsylvanicus)

Alabama: Infesting home in Elmore County. **Pennsylvania:** Infesting house in Dauphin County.

BLACK CARPET BEETLE
(Attagenus piceus)

Pennsylvania: Disturbing in several homes generally.

BLACK FLIES

Utah: Abundant and annoying in parts of Logan Canyon.

BOXELDER BUG
(Leptocoris trivittatus)

Delaware: Annoying homeowners in central Kent County. **Maryland:** Annoying homeowners on Eastern Shore, and in Charles County. **Pennsylvania:** Disturbing householders in Cauphin, Juniata, and Cumberland County.

A CANTHARID
(Chauliognathus sp.)

Indiana: Larvae in lawns and even homes in many parts of state.

CLOVER MITE
(Bryobia praetiosa)

Maryland: Annoying householders in Oakland. **Pennsylvania:** Entering homes in York County.

COCKROACHES

Idaho: Supella supellectilium observed in home in Moscow area. **Maryland:** S. supellectilium infesting home in Baltimore. **New Mexico:** Blatta orientalis problem in homes in Las Cruses. Moving in when lawns irrigated and homes vacant for short periods. **Oregon:** Blattella germanica in home in Alsea. Occurrence rare from coastal counties. **Pennsylvania:** S. supellectilium specimens identified from Centre County. **Utah:** S. supellectilium infesting several homes and apartments at Logan. **Virginia:** Infestation of S. supellectilium in home in Emporia and undetermined species heavy in home in Altavista.

A DERMESTID
(Thylodrias contractus)

California: Medium infestation on cereal products and fish food in Imperial, Imperial County. As far as known, second record of state.

HORN FLY
(Siphona irritans)

Oklahoma: Averaged 50-100 on untreated animals. **Virginia:** Counts on herds of untreated cattle in Montgomery County averaged 58.5 per animal. Frost caused considerable reduction in population.

HOUSE FLY
(Musca domestica)

Idaho: More common than any time in recent years in the Moscow area.

IMPORTED FIRE ANT
(Solenopsis saevissima richteri)

Alabama: New mounds in infested area; infestations may be as great or probably greater than last year. **Florida:** Indications infestations heavy in Escambia and Santa Rosa Counties. Positive finds from 53 locations in southeastern Jacksonville, Duval County, and 25 from Lutz area, Hillsborough County. Adults also collected at North Tampa, Hillsborough County. **Georgia:** Moderate infestation in Athens, Clarke County. New county record for state. **South Carolina:** Damage to pasture in Edgefield County. First record in county.

MILLIPEDES

Maryland: Heavy infestations in home, Ellicott City, Howard County. **Wisconsin:** Common in basements of homes and more numerous than in 1956.

MOSQUITOES

California: Aedes nigromaculis generally prevalent in San Joaquin Valley and parts of Sacramento Valley in small numbers; Anopheles freeborni numerous parts of Sacramento Valley. Elsewhere, populations low with generally light but scattered appearance of Culiseta spp, principally Culiseta inornata. **Nevada:** Moderate to heavy in irrigated areas of Virgin Valley, Clark County. **North Carolina:** Abundant, Brunswick, New Hanover, Onslow, and Carteret Counties. **Utah:** Abundant and annoying at Pickleville, and to man in Randolph area.

PUSS CATERPILLAR
(megalopyge opercularis)

South Carolina: Two persons stung in Anderson County. One admitted to hospital.

STABLE FLIES

Oklahoma: Populations in north central area much lower than in previous weeks. Counts average less than two per animal.

TERMITES

Oklahoma: Swarming of Reticulitermes hageni reported from several homes, Tulsa. **Texas:** Kalotermes approximatus collected in home at Waco. First record in state. **Wisconsin:** Infestations of Reticulitermes flavipes, Sheboygan County, among heaviest state has had.

Answers to Primer on page 35

1. b. **2.** b. **3.** a. **4.** False. Only the German roach has so far proved resistant to certain chemicals. **5.** c. **6.** a. **7.** False. It is used for control of the American, Oriental, and brown - banded roaches. **8.** False. Resistance to certain phosphate insecticides has been reported from Denmark and Sweden. **9.** True. **10.** True. **11.** False. The German female carries the capsule until it hatches. **12.** True. **13.** False. They seldom exceed 1½ inches in length. **14.** c. **15.** b. **16.** a. **17.** b. **18.** False. Formulations are usually oil-base or water emulsion sprays. **19.** False. Proper sanitary measures will remove the roach's food supply. **20.** True.

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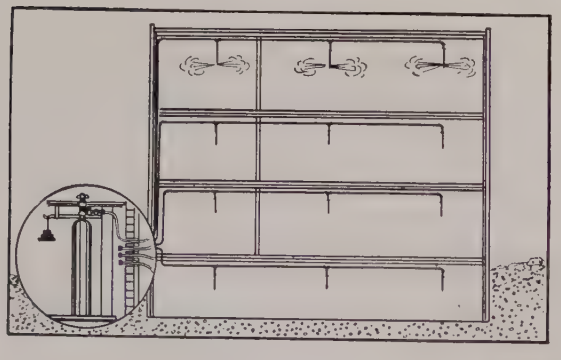

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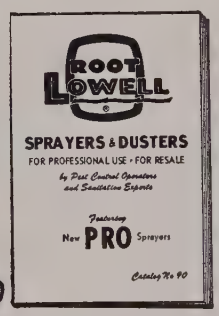

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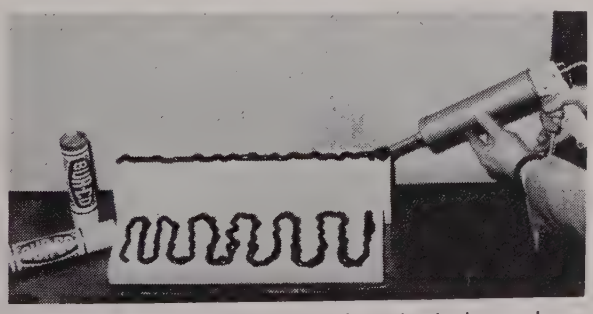

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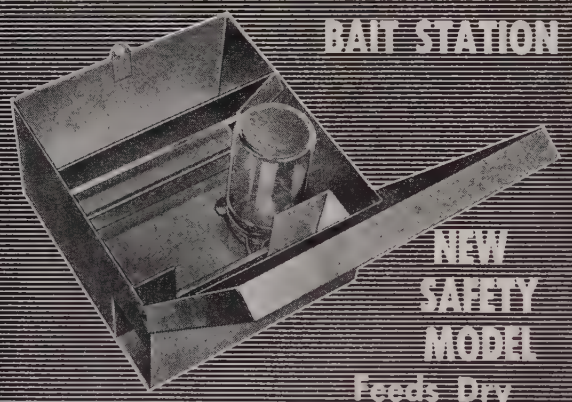

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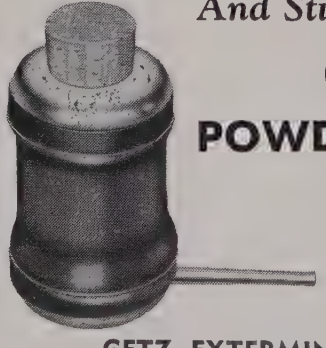

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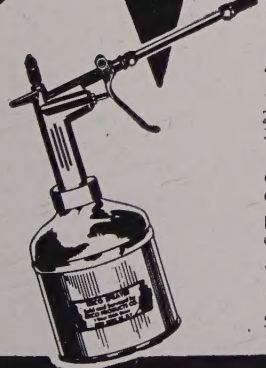

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Pestales

There'll be days. Eager to get to Louisville and the NPCA Convention early, Mrs. Jacques Hess (Mr. runs Exterminating Services Corp., New York, N. Y.) and Helen Buettner, wife of the late Bill Buettner, arrived at New York's La Guardia Airport 2½ hours before their plane was due to depart. There they ran into Mr. and Mrs. George R. Elliot (Ransford Pest Control, Worchester, Massachusetts), and were persuaded to switch from their 5:40 p.m. flight to an early 3:30 p.m. one so the four could travel together. Besides, the earlier plane was a "straight-through" flight. But instead of arriving in the convention city hours ahead of their 5:40 plane, the flight carrying the four was forced to land in Cincinnati with a bad starboard motor and finally arrived in Louisville a half hour later than the one the two women had originally scheduled.

* * *

Customer's always right. Orkin PCO Rufus Sisk of Nashville, Tennessee, was spraying a customer's shower room for roaches when he almost stumbled over a 30-inch alligator dozing on the tiled floor. Seems the infant reptile was given to the proprietor by a Florida "friend," and the proprietor reasoned it was Sisk's responsibility to find a home for it, since the latter is a pest control operator. Sisk had to oblige. *The gator was given to a zoo.*

* * *

Convention vacation. As long as they were coming East anyway to attend the NPCA convention in Louisville late in October, Christine and Ray Dewey (Dewey Products and Pest Control Co., Los Angeles) planned a 16-day cruise to the Caribbean which left New York November 2nd. Some friends staged a surprise Bon-Voyage party in the Deweys' stateroom aboard the M. S. Bergensfjord of the Norwegian American Line. There was champagne, flowers, and everything. Nice vacation after the convention for the Deweys.

* * *

Ardsley Admirers. Recently we visited the new Geigy plant in Ardsley, New York, where Diazinon ad manager Nick DeManczuk took us on a Cook's Tour of the beautiful plant set in the rural setting of northern Manhattan island. It's a gorgeous headquarters of modern design quietly surrounded by rich foliage. We envy the Geigy folks who work there.

* * *

Buettner portrait. The painting of William O. Buettner, presented to the National Pest Control Association at its Convention in Louisville by Mrs. Buettner, was done by Stewart Eldridge, a college classmate and life-long friend of Bill's who graduated from Dartmouth College with the industry's founder in 1924. Eldridge painted the portrait from a photograph furnished by Mrs. Buettner.

* * *

Sleepy-time mouse. A Husum, Germany housewife devised a unique method for trapping a mouse that kept raiding her kitchen and side-stepping her elaborately baited traps. One night she put a sleeping tablet in a bowl of sugar water and left it under the stove. Next morning she discovered the mouse sound asleep on the door sill. *Just like the doctor says, those after-dinner snoozes can be fatal.*

* * *

Grandpa Dave. Lt. Mark B. Weisburger, son of B. & D. A. Weisburger's Dave, and his wife, Roberta, are still heralding the arrival of their five-pound boy, Donald Martin, born October 5th at Ft. Benning, Georgia. Parental pride is great, as would be expected, but it's nothing compared to that of Grandpa Dave!

* * *

On the job. PCO Claude Snow, Snow Insecticide Co., Portland, Oregon never lets up. He even inspected all the dressers and closets in his hotel room before unpacking his belongings for the NPCA convention. But his probing paid off: Buffalo moths in the dresser!

ECONOMICAL RAT JIGGER* CAN'T TIP, CAN'T LEAK, SAYS 'POISON' ALL OVER IT!

Spill-proof! Exclusive flared skirt construction prevents container from tipping, even if rat or mouse steps on rim! Holds ⅗ ounce.

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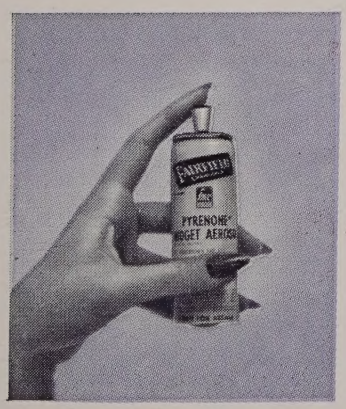

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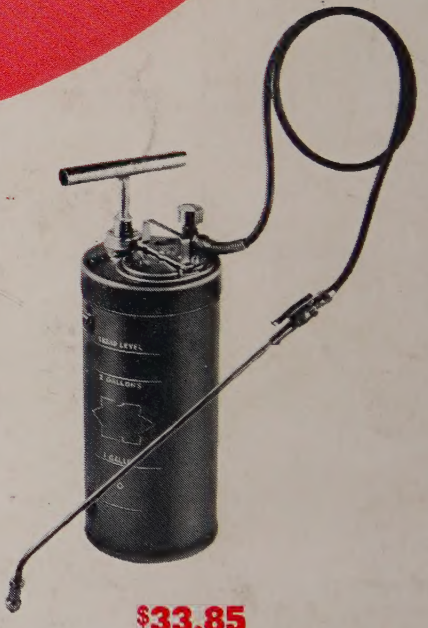
A 3 gal. stainless steel sprayer that is built for service! All mechanical seals - no soldered inlets - leakproof valve, gauge with unbreakable crystal - stainless steel 3 gal. tank and pump. Renewable hose and adapters- 5 ft. PCE oil-resistant hose ¼" I.D. - 18" PCE extension wand - fan pattern spray nozzle - Knapsack type web strap.



$33.85

All Prices Subject to Change Without Notice. Write for Catalog.

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ALL BRASS ONE-QUART SPRAYER
Gives Quick, Clean shut-off

Accommodates ⅛" NPT nozzle body enabling you to adapt your own nozzles to this unit. Guaranteed against all defects in manufacture. Included with each sprayer is a selection of spare washers, etc.

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